The Journal of the American Osteopathic Association

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Management of coronary disease

Editorial--A report to the membership

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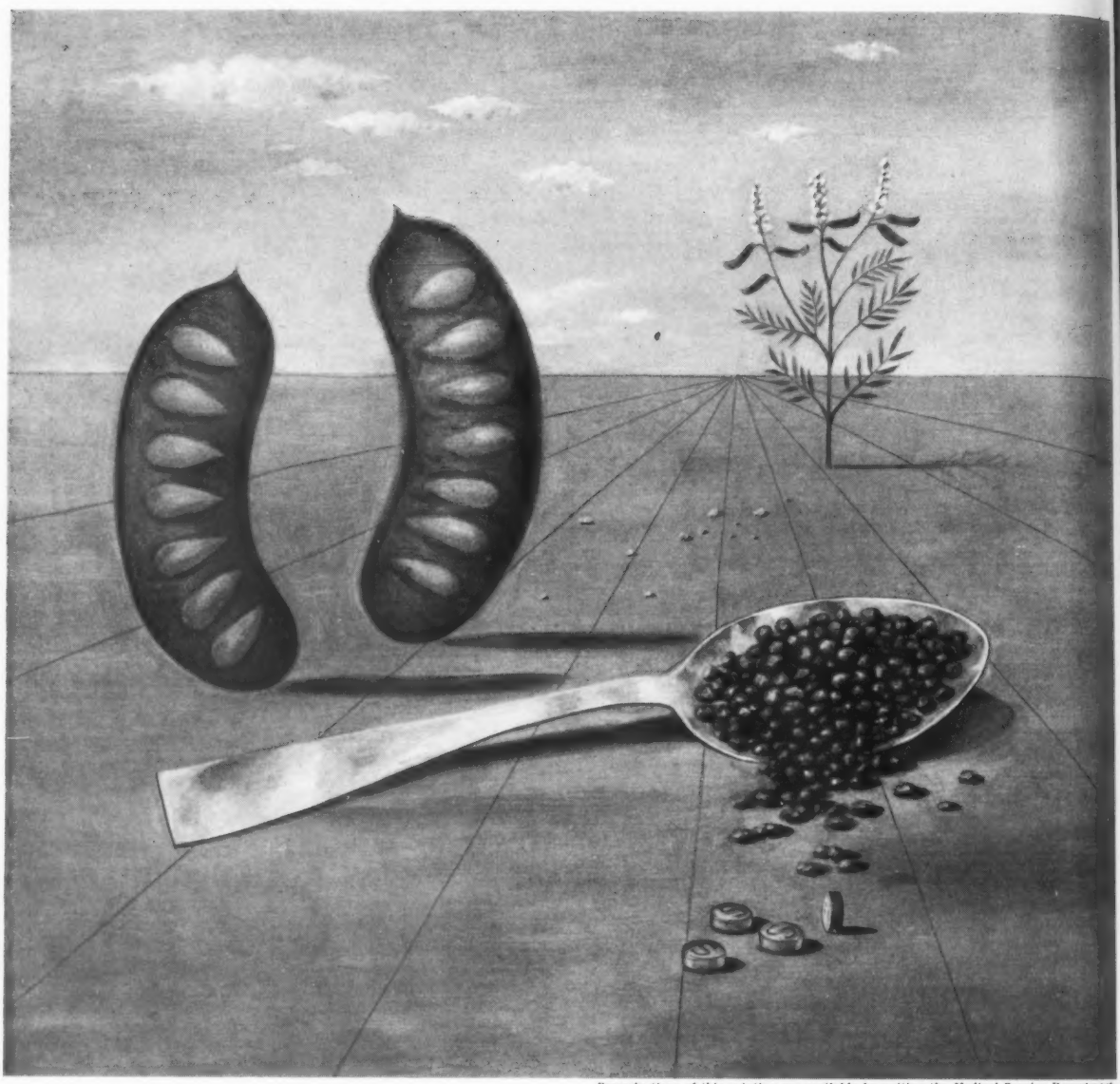

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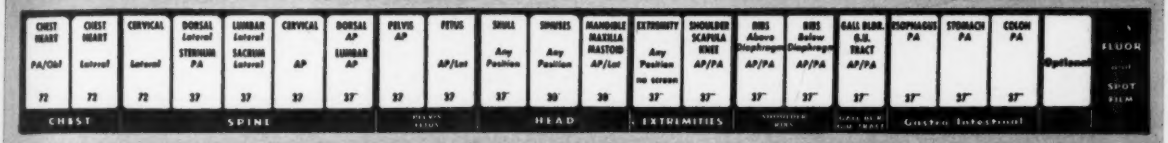

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INFORMATION FOR CONTRIBUTORS

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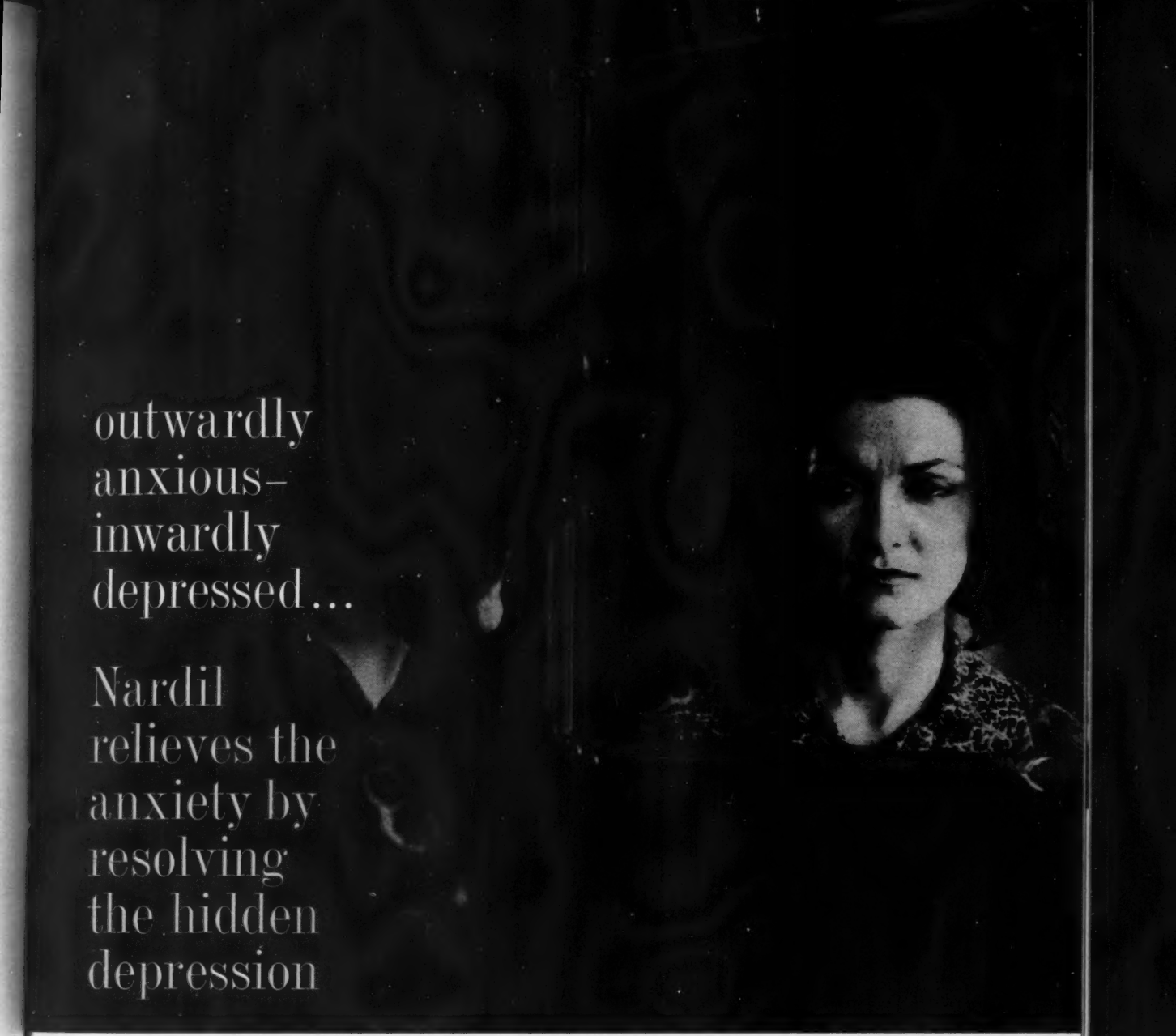

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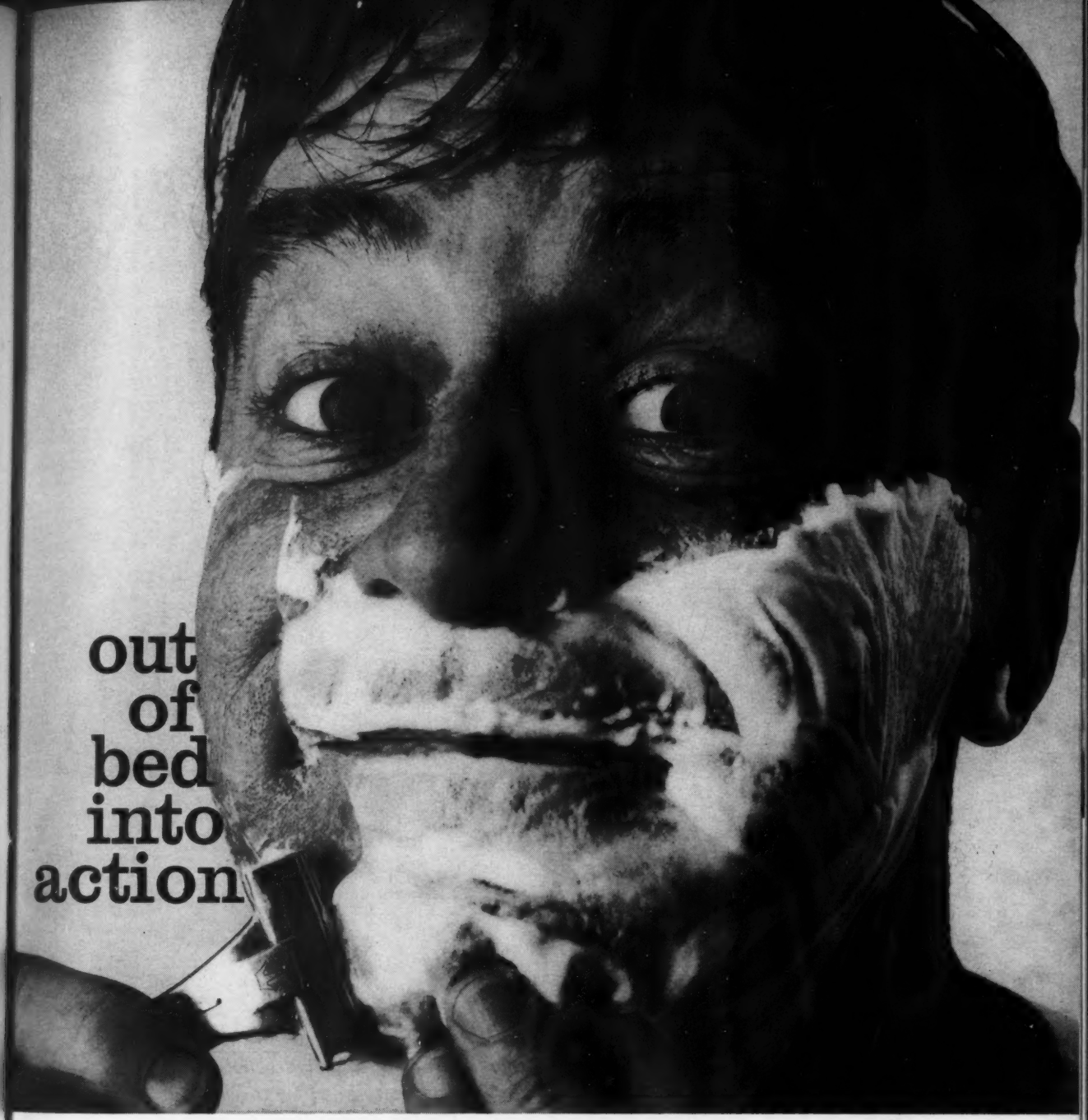

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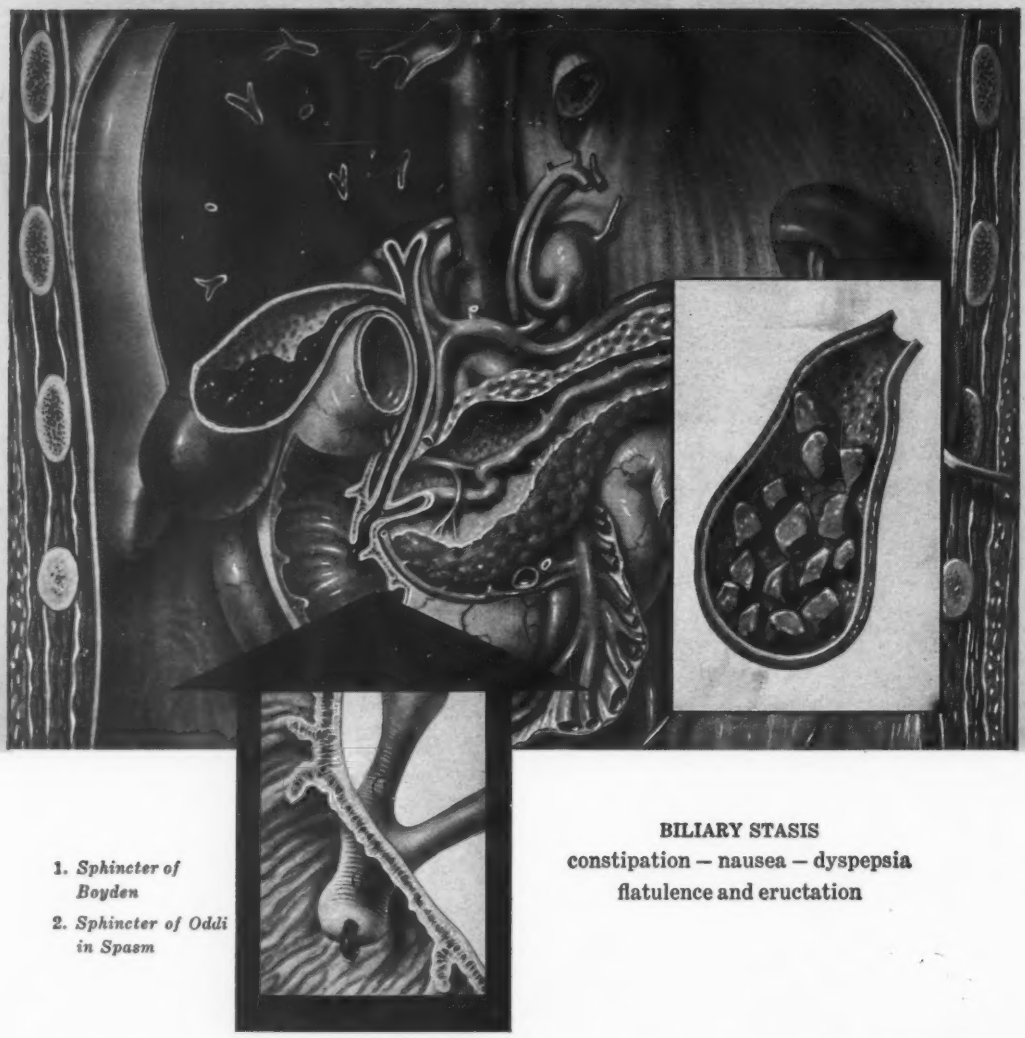


1. *Sphincter of Boyden*
2. *Sphincter of Oddi in Spasm*

BILIARY STASIS
constipation — nausea — dyspepsia
flatulence and eructation

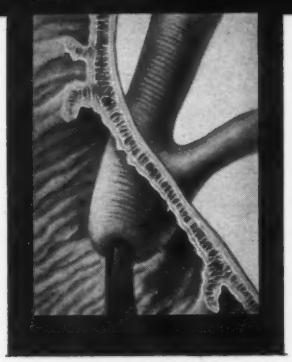
The primary function of the Cholan preparations is to induce hydrocholeretic action. The active ingredient is the pure oxidized bile acid, dehydrocholic acid, Maltbie. The Cholans increase the volume of low viscosity bile flow to flush out the biliary tract. In addition, there is a suitable Cholan dosage form to provide symptomatic and physiologic relief of biliary stasis, spasm or emotional factors that cause or complicate digestive disturbance, hepato-biliary dysfunction, constipation of biliary origin, cholecystitis, cholangitis, or postoperative treatment.

Cholan DH® — hydrocholeretic action increases the flow and heightens the pressure of low viscosity bile for normal flushing of the biliary tract. In fact, Cholan DH will increase the volume of bile by 33% to 100%.

Cholan V (hydrocholeretic-spasmolytic) — the volume and pressure of thin bile flow in the biliary tract is increased, and the V mg. of homatropine methylbromide relax the gallbladder and biliary sphincters in severe and chronic spasm.

Cholan HMB — a combination for the increased flow of thin bile, smooth muscle relaxation for the gallbladder and biliary sphincters, and mild sedation for patients with hepato-biliary dysfunction further complicated by emotional factors.

NORMAL BILIARY FUNCTION



Sphincter Muscles in Normal Relaxation

Cholan DH®
Cholan V
Cholan HMB

hydrocholeretic – spasmolytic

With **Cholan** *therapy, the distressing symptoms of constipation, nausea, dyspepsia, flatulence and eructation disappear. Normal digestive function is quickly restored.*

Cholan DH® – dehydrocholic acid, Maltbie, 250 mg., a chemically pure oxidized bile acid. Dosage: 1 or 2 tablets t.i.d. after meals. **Cholan V** – dehydrocholic acid, Maltbie, 250 mg., and 5 mg. homatropine methylbromide. Dosage: 1 or 2 tablets t.i.d. after meals. **Cholan HMB** – dehydrocholic acid, Maltbie, 250 mg., 2.5 mg. homatropine methylbromide, and 8 mg. phenobarbital. Dosage: 1 or 2 tablets t.i.d. after meals.

Supplied: Bottles of 100, 500 and 1,000 tablets.

For a trial supply write to Professional Service Department

Maltbie Laboratories Division • Wallace & Tiernan Inc. • Belleville 9, N. J.

PCN-81

Three major criteria for an effective laxative have been established by physicians*

1. freedom from griping or other irritating side effects

2. clinically proven effectiveness

3. predictable action

*Results of a survey of over 1,000 physicians conducted by the Bureau of Research, Inc., 555 W. Jackson Blvd., Chicago 6, Illinois (April, 1960).

PERI-COLACE®

Anthraquinone derivatives from cascara and dioctyl sodium sulfosuccinate, Mead Johnson

meets physicians' criteria for an effective laxative

With Peri-Colace "...side effects such as griping are reduced to a minimum."[1]

Peri-Colace, a unique combination of Peristim® and Colace® (dioctyl sodium sulfosuccinate) "...gave satisfactory results in 97 per cent of the cases [130 hospitalized patients]."[2]

Experience in practice has shown the unusual dependability of Peri-Colace.[1-4] It promptly, yet gently, induces bowel evacuation within 8 to 12 hours in most patients.

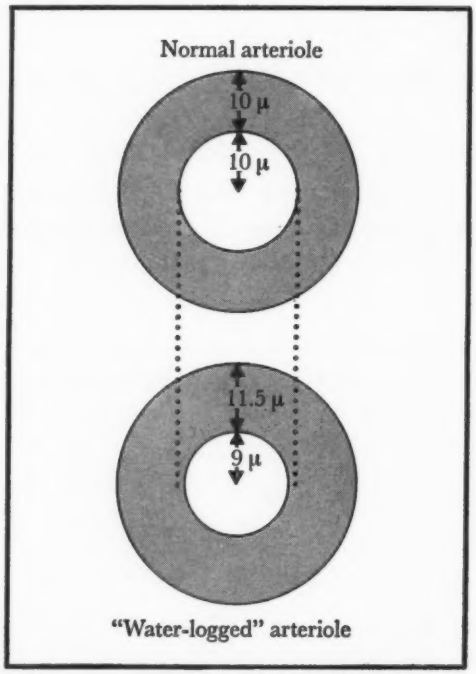
References: (1) Broders, A. C., Jr.: Am. J. Digest. Dis. *2*:483-486 (Sept.) 1957. (2) Lamphier, T. A.: Am. J. Proctol. *8*:442-444 (Dec.) 1957. (3) Smigel, J. O.; Lowe, K. J.; Hosp, P. H., and Gibson, J. H.: M. Times *86*:1521-1526 (Dec.) 1958. (4) Turell, R.: Curr. M. Dig. *26*:61-69 (Feb.) 1959.

Mead Johnson

Symbol of service in medicine

Why Esidrix® alone often lowers blood pressure satisfactorily

A number of investigators[1–4] have reported that Esidrix alone reduces blood pressure—even in patients without edema. One possible explanation for this antihypertensive effect is the following: Histologic studies of rats show that there is an increased water concentration in hypertensive arterioles which causes swelling of the arteriolar wall and, as a result, narrowing of the lumen and increased flow resistance.[5,6] By depleting excess salt and water from "water-logged" arteriolar walls, Esidrix increases lumen size and significantly decreases flow resistance.



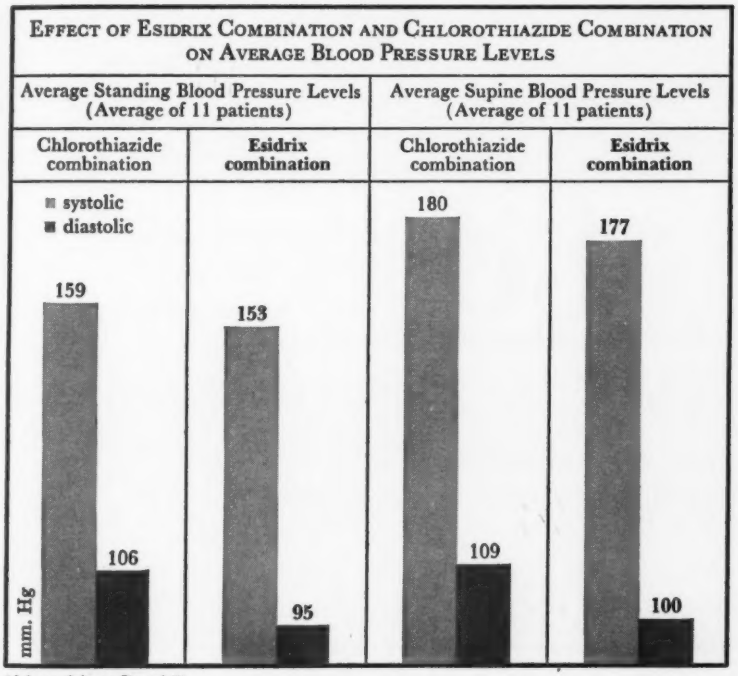
(Adapted from Tobian and Binion[5])

Schematic drawings show dimension of a normal arteriole and a hypothetical "water-logged" arteriole, the wall of which is thickened to about the same degree as the walls of hypertensive arterioles in histologic muscle preparation of rats.[5] The decrease in lumen size in the "water-logged" arteriole would increase flow resistance 54 per cent.[5]

References: 1. Calesnick, B.: Clin. Med. *6*:613 (April) 1959. 2. Vertes, V., and Sopher, M.: J.A.M.A. *170*:1271 (July 11) 1959. 3. Meltzer, L. E., Eichner, L. G., Ural, E., and Kitchell, J. R.: Am. J. Cardiol. *4*:741 (Dec.) 1959. 4. Bryant, J. M., Schvartz, N., Roque, M., Fletcher, L., Fertig, H., and Lauler, D. P.: To be published. 5. Tobian, L., Jr., and Binion, J. T.: Circulation *5*:754 (May) 1952. 6. Goldberger, E.: Am. J. Cardiol. *3*:259 (Feb.) 1959. 7. Dennis, E. W.: Clinical report to CIBA. 8. Borhani, N. O., in Moyer, J. H. (Editor): *Hypertension*, The First Hahnemann Symposium on Hypertensive Disease, W. B. Saunders Company, Philadelphia, 1959, p. 549.

2/2878HK

Why Esidrix® improves response to other antihypertensive agents



(Adapted from Dennis[7])

In many hypertensive patients, excess fluid and sodium in the arteriolar environment keep constricted blood vessels from dilating fully in response to antihypertensive therapy. By eliminating and redistributing excess fluid and sodium, Esidrix makes the vasculature more sensitive to other antihypertensive agents, thus enabling blood vessels to dilate to near-normal limits. Esidrix is frequently more effective in this respect than related compounds. For example, substitution of Esidrix for chlorothiazide in antihypertensive regimens often brings blood pressure closer to normotensive levels.[7,8]

CIBA
SUMMIT • NEW JERSEY

Supplied: ESIDRIX *Tablets*, 50 mg. (yellow, scored) and 25 mg. (pink, scored). *Also available:* ESIDRIX-K *Tablets* (white, coated), each containing 25 mg. Esidrix and 500 mg. potassium chloride. *Complete information about Esidrix and Esidrix-K sent on request.*

Antihypertensive and Antihypertensive Potentiator

Esidrix®
(hydrochlorothiazide CIBA)

a major improvement in

PURIVAX®

POLIOMYELITIS VACCINE

POLIOMYELITIS VACCINE, PURIFIED

MORE HIGHLY PURIFIED

PURIVAX Poliomyelitis Vaccine contains less monkey kidney protein than does commercial Salk vaccine. Consequently, the possibility of allergic sensitization is minimized.

Standardization is achieved by precise physical (rather than biological) methods so as to produce a uniform quantity of inactivated antigen in each dose.

MORE RAPID PROTECTION

PURIVAX Poliomyelitis Vaccine provides immunity in a higher percentage of patients who complete only *two* of the recommended three-dose series; this results in an earlier establishment of immunity in a significant proportion of patients.

Immunity in all patients who received *three* doses of PURIVAX Poliomyelitis Vaccine has been reported.*

GREATER SAFETY

PURIVAX Poliomyelitis Vaccine induces high antibody titers against all three types of poliomyelitis virus. Moreover, the highly virulent Mahoney strain of type 1 has been replaced by the less virulent Parker strain for even greater safety.

polio immunization

After Only TWO Injections

Percentage of Patients Showing Immunity to All Three Types of Poliomyelitis Virus*

PURIVAX POLIOMYELITIS VACCINE **91%** IMMUNE

POLIOMYELITIS VACCINE (Commercial Salk) **63%** IMMUNE

Dosage and Administration: It is recommended that three injections (intramuscular or subcutaneous) of 0.5 cc. each be given, with an interval of 4 to 6 weeks between the first and second injection. The third injection should be administered 7 months or more after the second injection.

The preferred procedure is to complete immunization before the season when poliomyelitis characteristically increases. However, the vaccine may be administered throughout the summer season. Special circumstances such as exposure to the disease, tonsillectomy, or trauma are not considered contraindications.

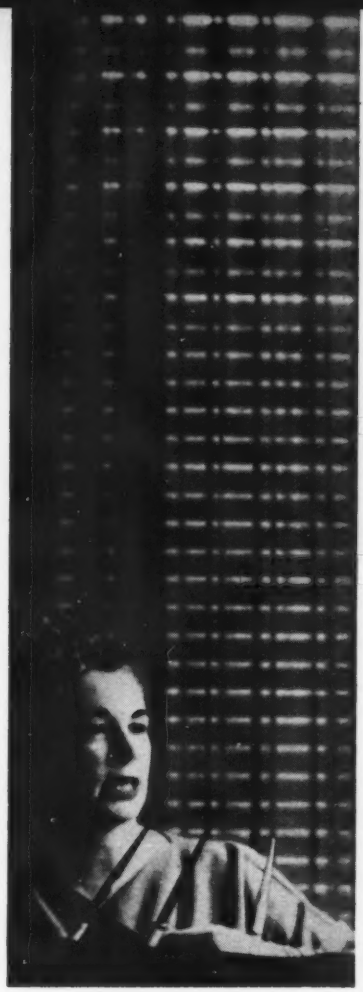
Supplied: 2-cc. vials.

*Hilleman, M. R., Charney, J., Tytell, A. A., Weihl, C., Cornfeld, D., Ichter, J. T., Riley, H. D., Jr. and Huang, N.: Investigation into the development and clinical testing of a poliomyelitis vaccine containing standardized amounts of purified poliomyelitis virus antigens, 1960 Symposium on Polio Vaccines, Newark, New Jersey, April 20, 1960.

For additional information, write Professional Services, Merck Sharp & Dohme, West Point, Pa.

MERCK SHARP & DOHME, DIVISION OF MERCK & CO., INC., WEST POINT, PA.

PURIVAX is a trademark of Merck & Co., Inc.

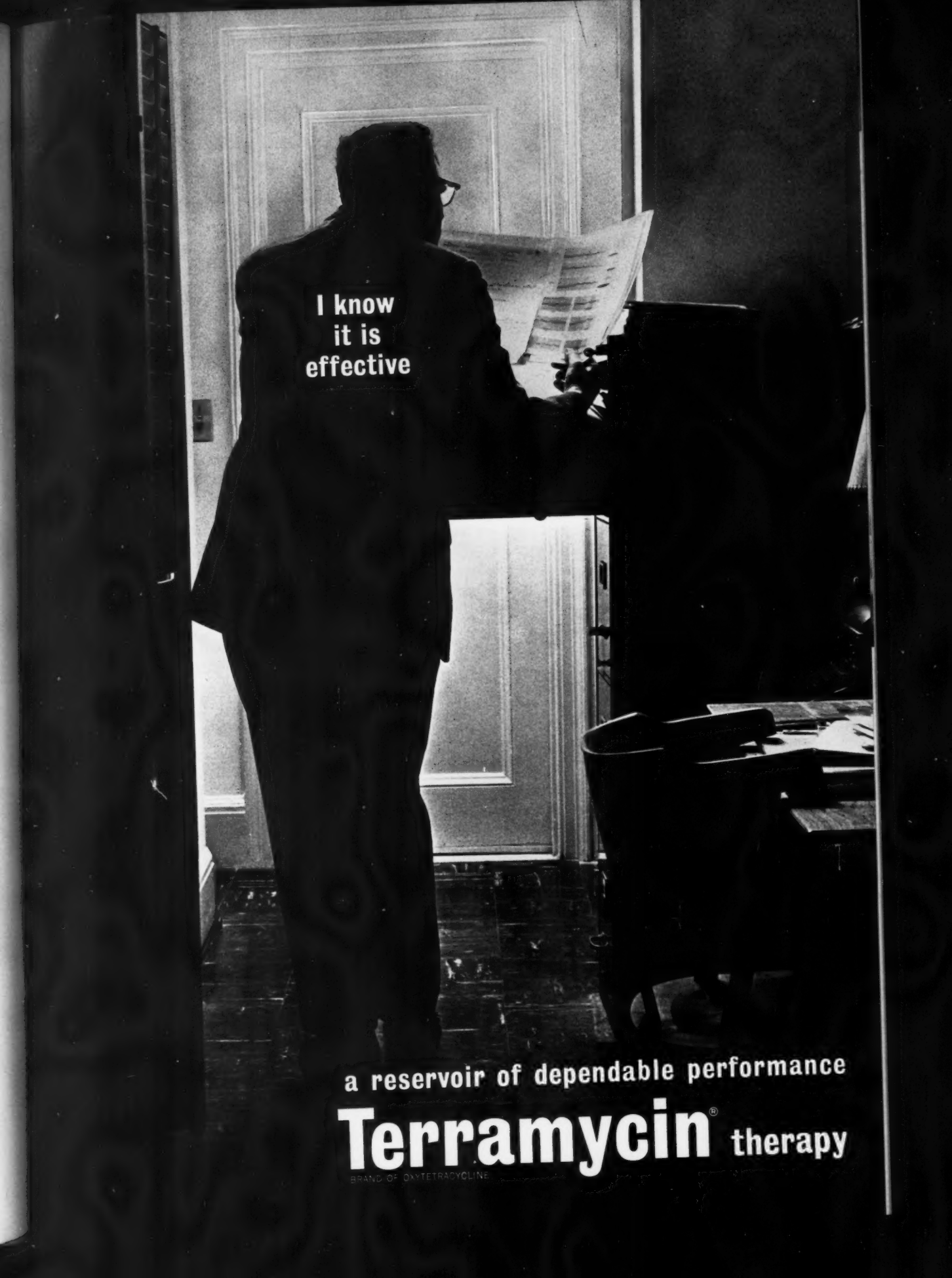


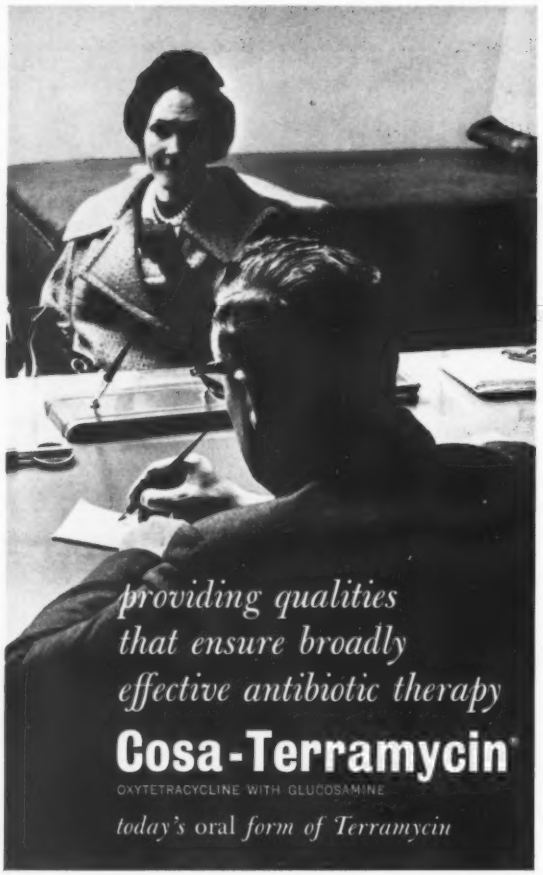
symptoms gone... feels like a new woman

basic therapy in vaginitis eliminates symptoms · itching · burning · leukorrhea · malodor · destroys pathogens · Trichomonas vaginalis · Candida (Monilia) albicans · nonspecific organisms...alone or in combination · has these advantages · high rates of clinical and cultural cures · effectiveness even in menstrual blood and vaginal debris · safe and nonirritating to delicate inflamed tissue · esthetically acceptable with no disagreeable staining

TRICOFURON®
(nifuroxime and furazolidone) Improved
Powder/Suppositories

EATON LABORATORIES
Division of The Norwich Pharmacal Company
NORWICH, NEW YORK


I know
it is
effective
a reservoir of dependable performance
Terramycin® therapy
BRAND OF OXYTETRACYCLINE



The continuing clinical effectiveness of Terramycin therapy derives as always from its proven antibiotic characteristics—rapid absorption; notably wide distribution in body tissues and fluids; high, active urinary concentrations; and a broad anti-infective spectrum embracing even such a troublesome organism as Pseudomonas. Additionally, Terramycin therapy provides the assurance of a 10-year record of exceptional toleration.

IN BRIEF

Cosa-Terramycin provides oxytetracycline (Terramycin®) with glucosamine for enhanced absorption.

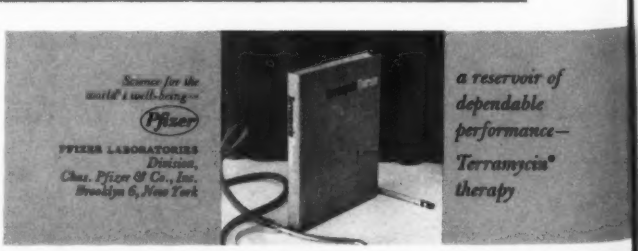
INDICATIONS: Because oxytetracycline is effective against both gram-positive and gram-negative bacteria, rickettsiae, spirochetes, large viruses, and certain parasites (amebae, pinworms), Cosa-Terramycin is indicated in a great variety of infections due to susceptible organisms, e.g., infections of the respiratory, gastrointestinal, and genitourinary tracts, surgical and soft-tissue infections, ophthalmic and otic infections, and many others.

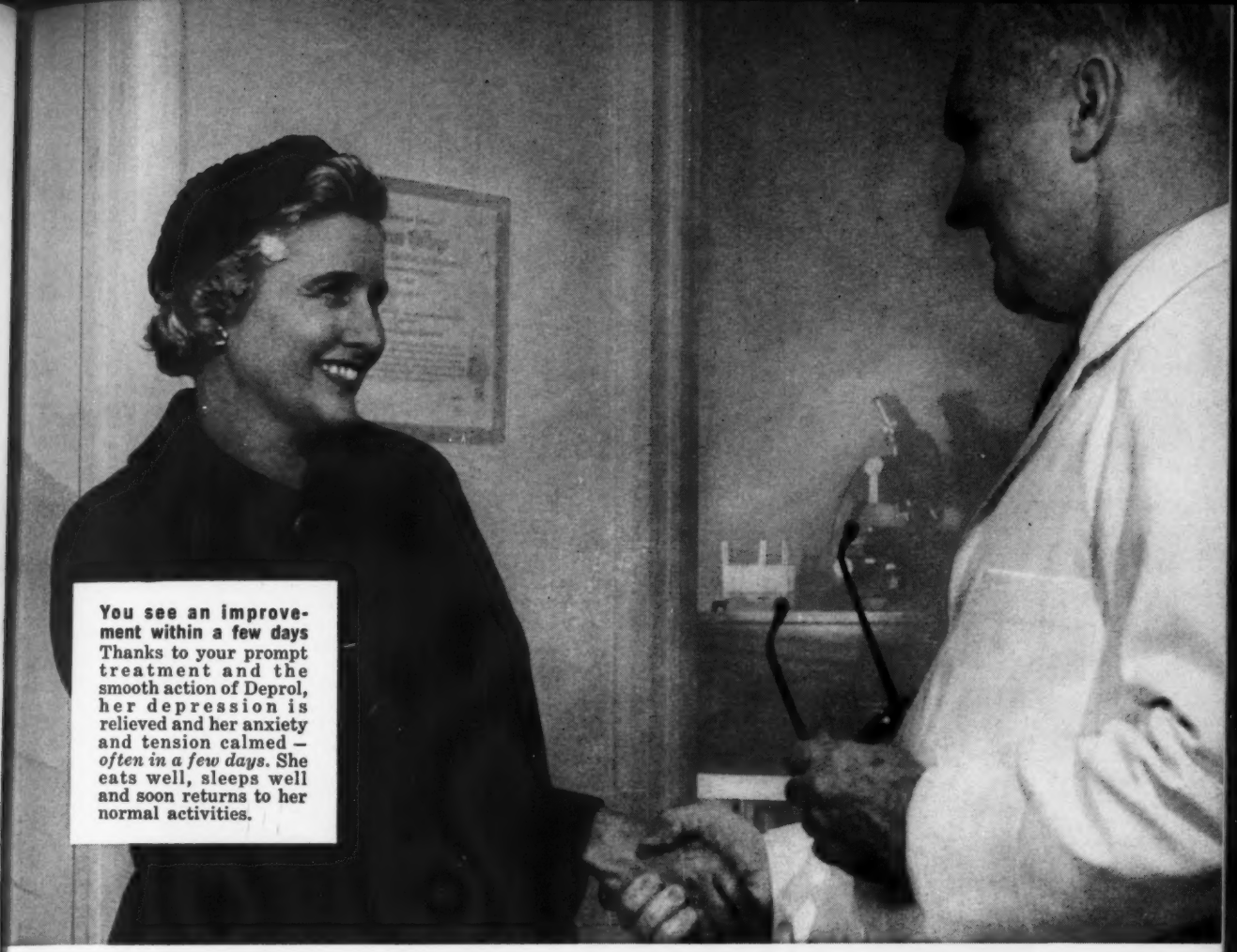
ADMINISTRATION AND DOSAGE: Adults: 1 Gm. of oxytetracycline daily in four divided doses is usually effective. In *severe* infections, a larger dosage (2-4 Gm. daily) may be indicated. Infants and children: 10-20 mg. of oxytetracycline per lb. of body weight daily. Certain diseases are treated in courses.

SIDE EFFECTS AND PRECAUTIONS: Antibiotics may allow overgrowth of nonsusceptible organisms — particularly monilia and resistant staphylococci. If this occurs, discontinue medication and institute indicated supportive therapy and treatment with other appropriate antibiotics. Aluminum hydroxide gel has been shown to decrease antibiotic absorption and is therefore contraindicated. Glossitis and allergic reactions are rare. There are no known contraindications to glucosamine.

SUPPLIED: *Cosa-Terramycin Capsules,* 250 mg. and 125 mg. Terramycin is also available in: *Cosa-Terrabon® Oral Suspension,* a palatable preconstituted aqueous suspension containing 125 mg. per 5 cc. teaspoonful, bottles of 2 oz. and 1 pint; *Cosa-Terrabon® Pediatric Drops,* a palatable preconstituted aqueous suspension containing 5 mg. per drop (100 mg. per cc.), bottle of 10 cc. with calibrated plastic dropper; and *Terramycin Intramuscular Solution, conveniently preconstituted,* in the new 10 cc. multi-dose vial, 50 mg. per cc., and in 2 cc. prescored glass ampules, containing 100 mg. or 250 mg., packages of 5 and 100. In addition, a variety of other systemic and local dosage forms are available to meet specific therapeutic requirements.

More detailed professional information available on request.




You see an improvement within a few days Thanks to your prompt treatment and the smooth action of Deprol, her depression is relieved and her anxiety and tension calmed – *often in a few days.* She eats well, sleeps well and soon returns to her normal activities.

Lifts depression...as it calms anxiety!

Smooth, balanced action lifts depression as it calms anxiety...rapidly and safely

Balances the mood – no "seesaw" effect of amphetamine-barbiturates and energizers. While amphetamines and energizers may stimulate the patient – *they often aggravate anxiety and tension.*

And although amphetamine-barbiturate combinations may counteract excessive stimulation – *they often deepen depression.*

In contrast to such "seesaw" effects, Deprol's smooth, *balanced* action lifts depression as it calms anxiety – both at the same time.

Acts swiftly – the patient often feels better, sleeps better, within a few days. Unlike the delayed action of most other antidepressant drugs, which may take two to six weeks to bring results, Deprol relieves the patient quickly – often within a few days. Thus, the expense to the patient of long-term drug therapy can be avoided.

Acts safely – no danger of liver damage. Deprol does not produce liver damage, hypotension, psychotic reactions or changes in sexual function – frequently reported with other antidepressant drugs.

Dosage: Usual starting dose is 1 tablet q.i.d. When necessary, this dose may be gradually increased up to 3 tablets q.i.d.

Composition: 1 mg. 2-diethylaminoethyl benzilate hydrochloride (benactyzine HCl) and 400 mg. meprobamate. **Supplied:** Bottles of 50 light-pink, scored tablets. Write for literature and samples.

▲Deprol▲®

WALLACE LABORATORIES/ *Cranbury, N. J.*

oral aminophylline

readily tolerated

by almost every patient

AMINOPHYLLINE DURA-TAB S.M.®

Oral Sustained Medication* Aminophylline 4½ gr. (.3 Gm.)

one dose q.12 h. maintains effective uniform blood levels in cardio-pulmonary conditions

Many patients who cannot tolerate ordinary aminophylline tablets can now take **Aminophylline Dura-Tab S.M.** without gastric irritation. The reason: only a fraction of this sustained-action aminophylline contacts the gastric membranes — the balance being absorbed slowly all along the intestinal tract.

one dose q. 12 h. (1 to 2 Aminophylline Dura-Tabs) in adults maintains effective blood levels. For children under 10, one-half Dura-Tab q. 8 to 10 h. • Indicated in bronchial asthma, pulmonary emphysema, congestive heart failure, angina pectoris, paroxysmal dyspnea and Cheyne-Stokes respiration.

Bottles of 30, 100, 250 — cost comparable to ordinary aminophylline tablets.

*U. S. Patent No. 2,895,881

Samples and literature upon request.

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...and other painful or disabling musculoskeletal conditions often respond rapidly to the "antidoloritic"* effects of DECAGESIC. DECAGESIC helps restore normal function by relieving pain and discomfort, by its anti-inflammatory effect, and by imparting a sense of well-being. DECAGESIC combines the benefits of DECADRON® (dexamethasone) and aspirin with aluminum hydroxide to provide increased effectiveness and to reduce the possibility of side effects.

Decagesic®

dexamethasone with aspirin and aluminum hydroxide

CONSERVATIVE MANAGEMENT FOR PROMPT SUPPRESSION OF INFLAMMATION AND FOR RELIEF OF ASSOCIATED PAIN

Indications: Acute painful inflammatory musculoskeletal disorders, mild to moderate rheumatic and arthritic conditions, other collagen disorders and conditions in which the conjunctive administration of a corticosteroid and salicylate can be beneficial.

Dosage: 1 or 2 tablets 3 or 4 times daily. The usual precautions of corticosteroid therapy should be observed. Additional information on DECAGESIC is available to physicians on request. Supplied: Bottles of 100. Each tablet contains 0.25 mg. of DECADRON (dexamethasone), 500 mg. of aspirin and 75 mg. of aluminum hydroxide (present as the dried gel). DECAGESIC and DECADRON are trademarks of Merck & Co., Inc.

*"Antidoloritic" describes the relief of pain associated with inflammation—dolor=pain, itic=associated with inflammation.

MERCK SHARP & DOHME • Division of Merck & Co., INC., West Point, Pa.

IN GENITOURINARY INFECTIONS

Gantrisin

THE QUALITY OF GREATNESS

Reports in hundreds of leading journals and scores of standard textbooks reflect the position of Gantrisin as a drug of choice in genitourinary infections.

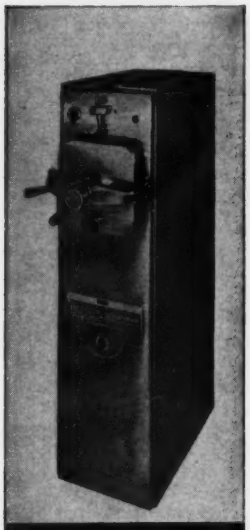
ROCHE

Consult literature and dosage information, available upon request, before prescribing.

ROCHE LABORATORIES • Division of Hoffmann-La Roche Inc.

GANTRISIN® brand of sulfisoxazole

The 613-R Dynaclave
Low-cost, high-speed autoclave — portable automatic — efficient



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Office pressure steam sterilization to hospital standards and convenience

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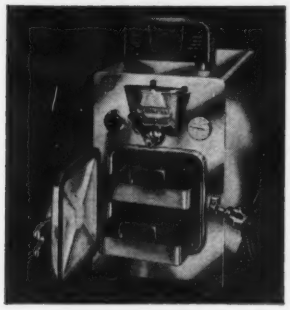
CAN NOW GIVE PATIENTS THE POSITIVE PROTECTION OF PRESSURE STEAM STERILIZATION



The all-purpose 8816 Autoclave
Designed to meet exacting surgical sterilization standards — Cyclomatic Timer

One of these Amsco Autoclaves, plus the technique training offered by Amsco can aid your efforts toward improved patient protection. At the same time, you can attain a more efficient and economical office operation.

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alerts the mind / tones the body

here's why: Each day's dose of Alertonic (3 tablespoonfuls) contains:

a mild psychic stimulant: Meratran (pipradrol) Hydrochloride, 2 mg.

abundant vitamins & minerals: Vitamin B_1 (Thiamine Hydrochloride), 10 mg.; Vitamin B_2 (Riboflavin), 5 mg.; Vitamin B_6 (Pyridoxine Hydrochloride), 1 mg.; Niacinamide, 50 mg.; Choline, 100 mg.; Inositol, 100 mg.; Iodine (as Potassium Iodide), 1 mg.; Calcium Glycerophosphate, 100 mg. and one milligram of each of the following: cobalt, manganese, magnesium, zinc, molybdenum.

in a rich 15% alcohol base

Dosage: One tablespoonful t.i.d. 30 minutes before meals.

Supplied: Pint bottles, on B_1 only.

To date more than 30 million doses have been prescribed.

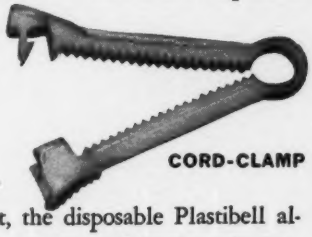
TRADEMARKS: ALERTONIC®, MERATRAN®

Merrell SINCE 1828

THE WM. S. MERRELL COMPANY
CINCINNATI, OHIO • ST. THOMAS, ONTARIO

to begin with...

. . . there are ways you can make life easier for the newborn infant . . . and for those who will care for him during his first few days of life. Hollister's disposable Umbilical Cord-Clamp, for instance, is swiftly applied with only one hand. And it firmly . . . safely . . . seals off the cord, maintains constant pressure as the cord shrivels, will not come open accidentally, needs no belly bands, may be autoclaved.



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PLASTIBELL

For the male infant, the disposable Plastibell allows safe delivery room circumcision in only 2 to 3 minutes . . . immediately after birth. The job is done quickly, cleanly, easily, and is usually all healed by the time the infant goes home. This relieves the parents of anxiety, saves time for the doctor and the hospital.

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833 North Orleans Street, Chicago 10, Illinois

"...relief of itching...in some cases bordered on the dramatic."[1]

tacaryl T.M.

METHDILAZINE HYDROCHLORIDE, MEAD JOHNSON

inherently sustained action at the cellular level

In a recent report, Tacaryl provided fair, good, or excellent relief of itching in 94 per cent of 373 adults and children exhibiting various pruritic dermatoses. The most outstanding results were obtained in those with chronic neurodermatitis.[1]

Tacaryl prolongs relief of itching because its sustained action is inherent in the molecule and does not depend upon the use of artificial construction. Tacaryl thus controls itching or allergy with b.i.d. dosage.

potent, prolonged action

Pharmacologic data, based on antagonism of histamine-induced bronchospasm in guinea pigs, show the relative effects of protective doses of Tacaryl and other drugs (tripelennamine, chlorpheniramine, promethazine). With the exception of Tacaryl, the drugs protect the animals transiently and are relatively ineffective after 4 hours. A protective dose of Tacaryl is 2 to 14 times as potent as the other drugs at 4 hours. Furthermore, Tacaryl's protective effect continues for at least 12 hours.[2]

low toxicity–minimal side effects

In studies to date,[3] side effects were minimal; in only a small percentage of cases was mild drowsiness observed. Tolerance was not reported even after long usage. No cumulative effect has been observed.

also effective in a wide range of allergic conditions

Studies comprising 1,356 patients[1,3-7] report that Tacaryl provides symptomatic relief in a wide variety of allergic disorders.

dosage

Adults: Tablets—One tablet (8 mg.) twice daily. Syrup—Two 5 cc. teaspoonfuls (8 mg.) twice daily. *Children:* One-half the adult dosage.

In some patients it may be desirable to adjust dosage to meet individual requirements. For complete details on indications, dosage, administration and clinical background, see the brochure on Tacaryl, available on request from Mead Johnson & Company, Evansville 21, Indiana.

supplied

Scored tablets, 8 mg., bottles of 100. Syrup, 4 mg. per 5 cc. teaspoonful, 16 oz. bottles.

references: (1) Howell, C. M., Jr.: North Carolina M. J. *21*:194-195 (May) 1960. (2) Lish, P. M.; Albert, J. R.; Peters, E. L., and Allen, L. E.: Arch. internat. pharmacodyn. *126*:1960, in press. (3) Clinical Research Division, Mead Johnson & Company. (4) Wahner, H. W., and Peters, C. A.: Proc. Staff Meet. Mayo Clin. *35*:161-169 (March 30) 1960. (5) Crepea, S. B.: J. Allergy *31*:283-285 (May-June) 1960. (6) Crawford, L. V., and Grogan, F. T.: J. Tennessee M. A. *53*:307-310 (July) 1960. (7) Spoto, A. P., Jr., and Sieker, H. O.: Ann. Allergy *18*:761-764 (July) 1960.

Mead Johnson
Symbol of service in medicine

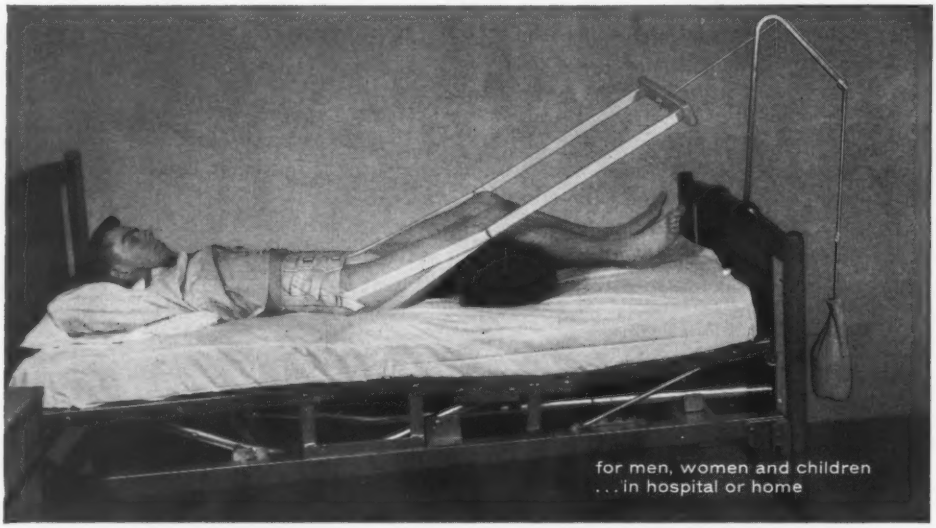
139403A

CAMP'S VARCO

True Pelvic Traction

FOR LOW BACK SYNDROME

original, authentic, anatomically and physiologically correct



Recommended position for strains and sprains

INDICATIONS	ADVANTAGES	AVOIDS
Herniation of lumbar disc	Effective traction	Dermatitis from adhesives
Sprain of lower back	Early relief from pain	Thrombophlebitis
Acute scoliosis	Permits proper nursing	Swollen ankles and knees
Fracture of lumbar vertebrae or processes	No complications	Patient irritation
Injury to lower back following difficult confinement	No contraindications	Prolonged disability
Simple fractures of pelvic bones	Easily applied	Quadriceps atrophy
	Patients cooperate	Prolapse of lumbar disc

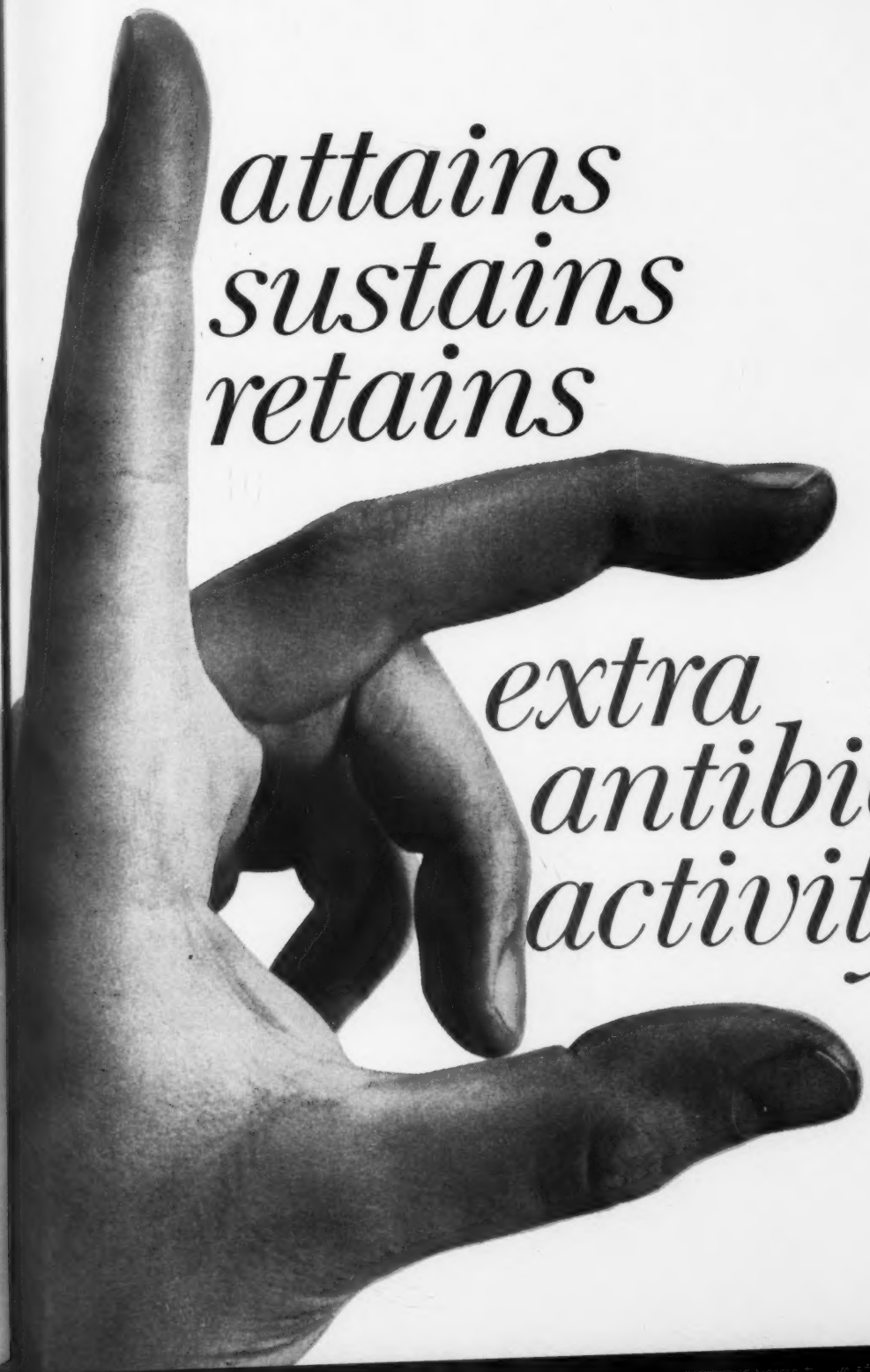
S. H. CAMP & COMPANY, JACKSON, MICHIGAN

CAMP

S. H. Camp & Company of Canada, Ltd., Trenton, Ontario

DECLOMYCIN®

DEMETHYLCHLORTETRACYCLINE LEDERLE

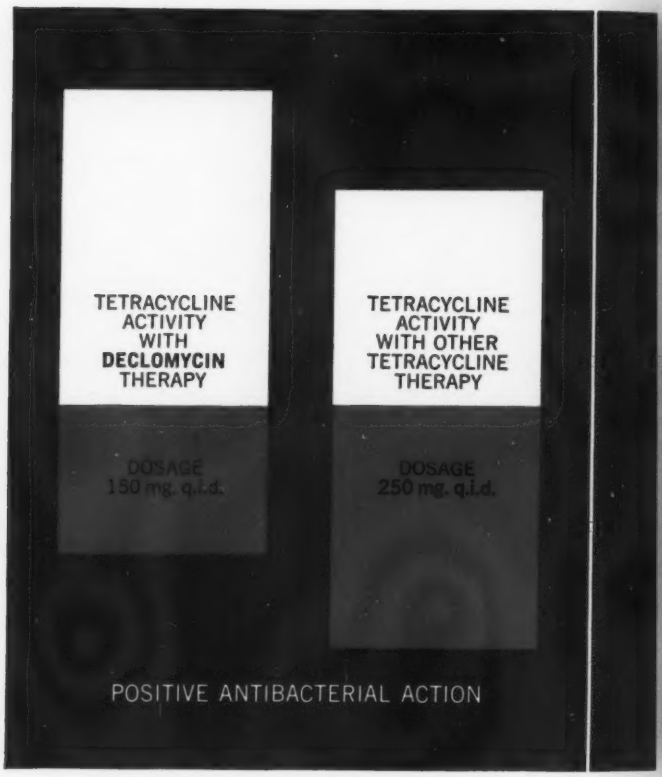


attains
sustains
retains

extra
antibiotic
activity

extra-activity...promptly attained

DECLOMYCIN Demethylchlortetracycline attains —usually within two hours—blood levels more than adequate to suppress susceptible pathogens. These levels are attained in tissues and body fluids on daily dosages substantially lower than those required to elicit antibiotic activity of comparable intensity with other tetracyclines. With other tetracyclines, the average, effective, adult daily dose is 1 Gm. With DECLOMYCIN Demethylchlortetracycline, it is only 600 mg.


TETRACYCLINE ACTIVITY WITH DECLOMYCIN THERAPY
DOSAGE 150 mg. q.i.d.
TETRACYCLINE ACTIVITY WITH OTHER TETRACYCLINE THERAPY
DOSAGE 250 mg. q.i.d.
POSITIVE ANTIBACTERIAL ACTION

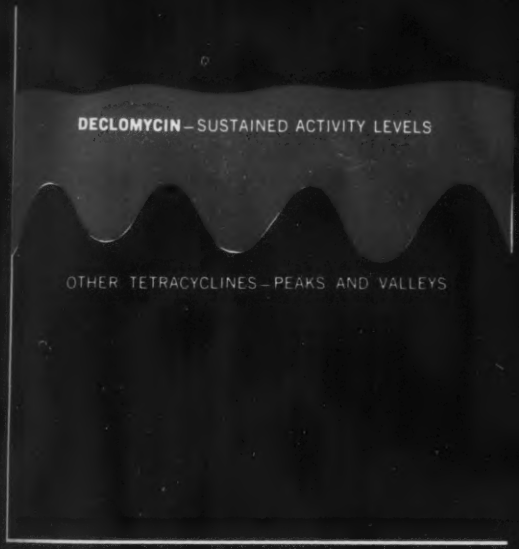
DECLO

evenly sustained

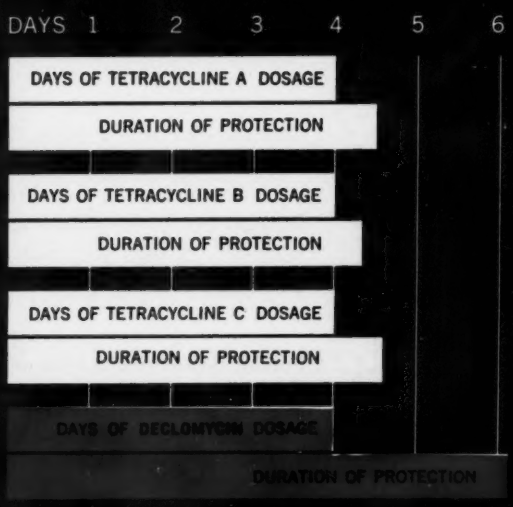
DECLOMYCIN Demethylchlortetracycline sustains, through the entire therapeutic course, the high activity levels needed to control the primary infective process and to check the onset of a complicating secondary infection at the original—or at another—site. This combined therapeutic action is sustained, in most instances, without the pronounced hour-to-hour, dose-to-dose, peak-and-valley fluctuations in activity levels which characterize other tetracyclines.

long retained

DECLOMYCIN Demethylchlortetracycline retains significant activity levels, up to 48 hours after the last dose is given. At least a full, extra day of positive antibacterial action may thus be confidently expected. One capsule four times a day, for the average adult in the average infection, is the same as with other tetracyclines—but the **total** dosage is lower and the duration of anti-infective action is longer.



PROTECTION AGAINST PROBLEM PATHOGENS


DAYS 1 2 3 4 5 6
DAYS OF TETRACYCLINE A DOSAGE
DURATION OF PROTECTION
DAYS OF TETRACYCLINE B DOSAGE
DURATION OF PROTECTION
DAYS OF TETRACYCLINE C DOSAGE
DURATION OF PROTECTION
DAYS OF DECLOMYCIN DOSAGE
DURATION OF PROTECTION

PROTECTION AGAINST RECURRENCE

MYCIN®

DEMETHYLCHLORTETRACYCLINE LEDERLE

- higher activity/intake ratio—positive antibacterial action
- sustained activity levels—protection against problem pathogens
- up to two extra days' activity—protection against recurrence

CAPSULES, 150 mg., bottles of 16 and 100. **Dosage:** Average infections – 1 capsule four times daily. Severe infections—Initial dose of 2 capsules, then 1 capsule every six hours.
PEDIATRIC DROPS, 60 mg./cc. in 10 cc. bottle with calibrated, plastic dropper. **Dosage:** 1 to 2 drops (3 to 6 mg.) per pound body weight per day—divided into 4 doses.
SYRUP, 75 mg./5 cc. teaspoonful (cherry-flavored), bottles of 2 and 16 fl. oz. **Dosage:** 3 to 6 mg. per pound body weight per day—divided into 4 doses.

PRECAUTIONS: As with other antibiotics, DECLOMYCIN may occasionally give rise to glossitis, stomatitis, proctitis, nausea, diarrhea, vaginitis or dermatitis. A photodynamic reaction to sunlight has been observed in a few patients on DECLOMYCIN. Although reversible by discontinuing therapy, patients should avoid exposure to intense sunlight. If adverse reaction or idiosyncrasy occurs, discontinue medication.

Overgrowth of nonsusceptible organisms is a possibility with DECLOMYCIN, as with other antibiotics. The patient should be kept under observation.

for the
added measure
of protection
in clinical
practice

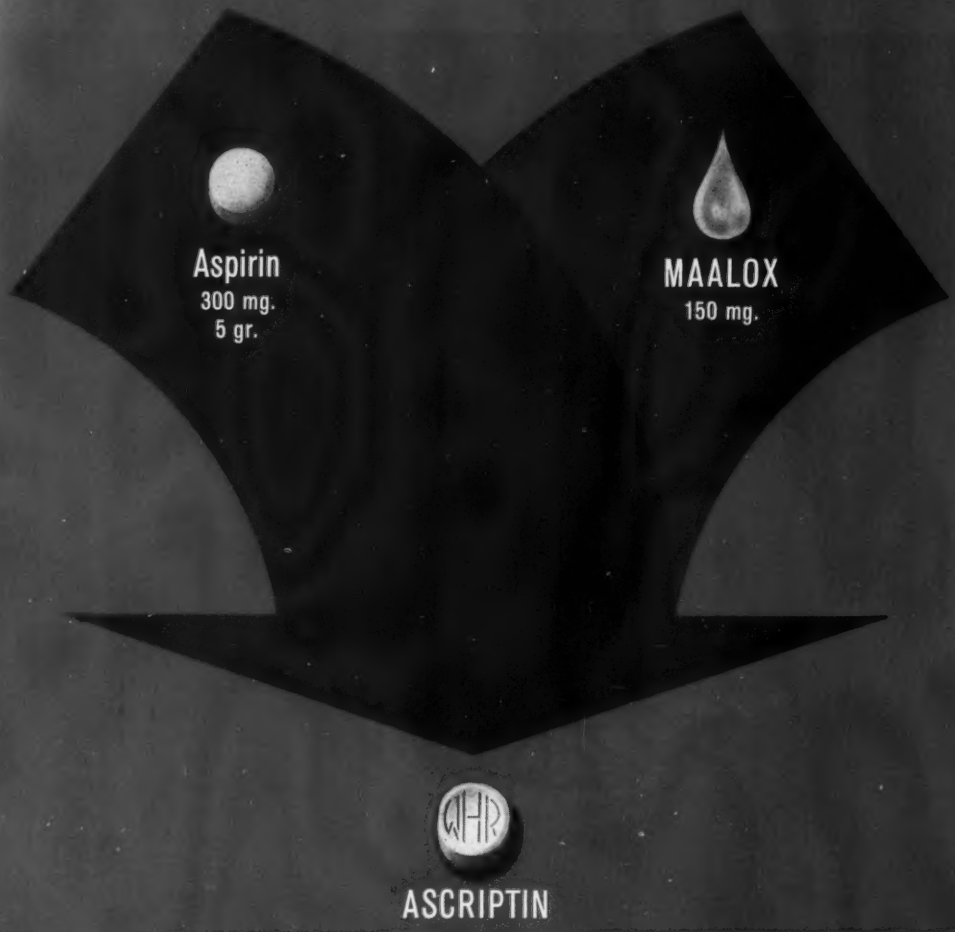
DECLOMYCIN®

DEMETHYLCHLORTETRACYCLINE LEDERLE

LEDERLE LABORATORIES, a Division of AMERICAN CYANAMID COMPANY, Pearl River, New York

A-32

aspirin buffered with the most widely-prescribed antacid...



in long-term administration, as in Arthritis,
when aspirin combined with an antacid is desired:

Specify **Ascriptin®** RORER

the aspirin buffered with the best

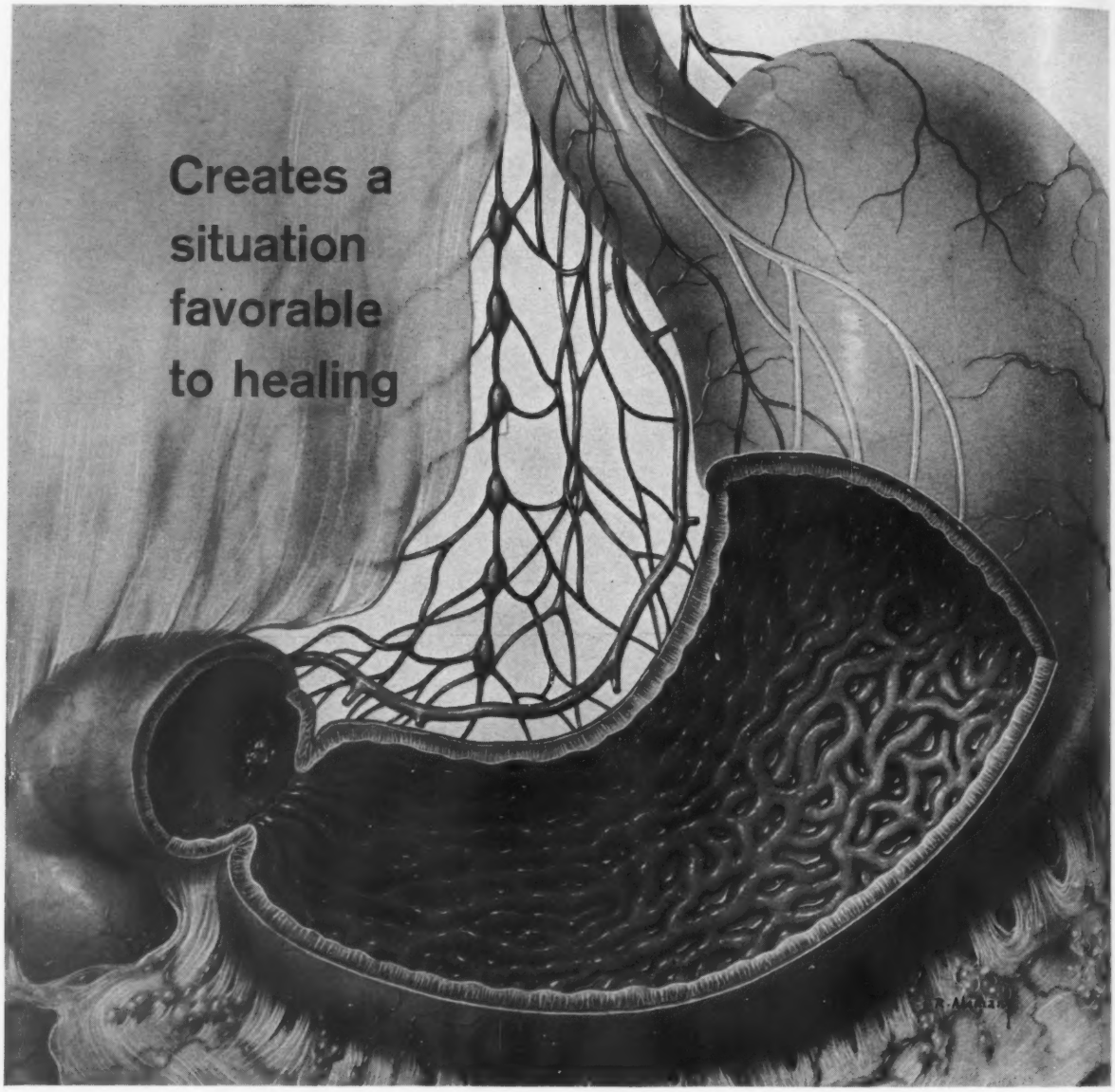
To prevent or minimize gastric distress which often accompanies prolonged or high level administration of acetylsalicylic acid, ASCRIPTIN provides aspirin in combination with MAALOX®, the preferred professional antacid. The recognized superiority of MAALOX makes ASCRIPTIN a superior aspirin-antacid, with the virtues of buffered aspirin and with the added distinction of being promoted professionally only.

Indicated wherever salicylates are useful, ASCRIPTIN is particularly suited to the long-term requirements of your arthritic patients.

Supplied: Bottles of 100 and 500 tablets. For severe pain — Capsules ASCRIPTIN with Codeine (codeine phosphate 15 mg.), bottles of 50.

ROHER

WILLIAM H. RORER, INC. PHILADELPHIA, PENNSYLVANIA

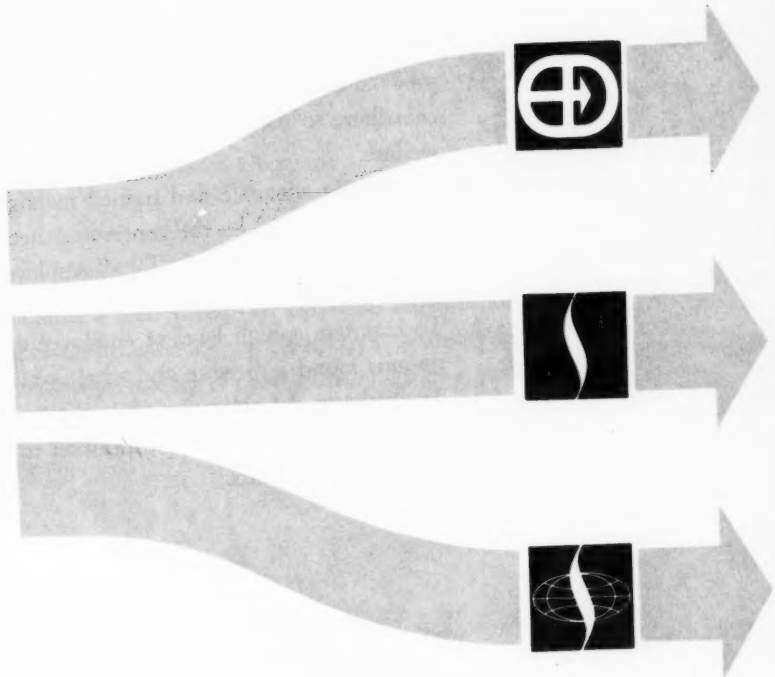


In ulcer: 'Combid' *Spansule* capsules provide emotional as well as physical control. 'Combid' reduces secretion, spasm and nausea—as well as anxiety, tension and apprehension—for 10 to 12 hours after just one capsule. A convenient q12h regimen provides 24-hour, continuous control; creates a situation favorable to healing. For full information, see PDR. *Smith Kline & French Laboratories.*

Combid®
brand of prochlorperazine and isopropamide

Spansule®
brand of sustained release capsules

Special
Report
from
Mead Johnson
and
Company



Corporate Objectives of Mead Johnson & Company

1. To earn an adequate return on invested capital through service in medicine.
2. To seek growth in the fields of specialty nutritional and pharmaceutical products.
3. To achieve growth through fundamental research and sound product development of the kind and quality designed to contribute to the advancement of medicine and the public welfare.
4. To provide adequate and trained management talent at all levels as required by the continuous needs of the business.
5. To provide formal training for all employees to promote individual growth and development.
6. To maintain a high level of employee morale through continuous sound leadership and administration.
7. To discharge the obligation of corporate citizenship by effective participation in and contribution to industry, national, state and local affairs.

A Report to the Friends of Mead Johnson & Company

We are pleased to announce a new pattern of corporate organization, effective immediately. In order to enhance the Company's capability for service in medicine and to take advantage of the opportunities for growth in increasingly diversified fields of interest, the following autonomous divisions have been created.

Mead Johnson
Laboratories

Symbol of service in medicine

This Division will carry on the traditional business of Mead Johnson & Company under the following charter:

Mead Johnson Laboratories shall create and market medically validated nutritional and pharmaceutical products, including infant formulas and vitamins, for human use.

Mead Johnson Laboratories shall rely on fundamental research, applied research, and product development designed to contribute to the advancement of human health.

Mead Johnson Laboratories shall be guided by the following principles in support of its slogan, "Symbol of Service in Medicine":

(a) To advance the practice of medicine as a science, by the dissemination of technical knowledge in specific fields of interest.

(b) To contribute to formal medical education.

(c) To contribute to essential research in medical institutions.

(d) To provide a systematic program of medical practice aids.

(e) To engage in programs designed to broaden public understanding of the proper role and function of the physician.

Mead Johnson Laboratories shall engage in a continuing program of clinical research to provide a rich background of clinical validation and support of its products.

Mead Johnson Laboratories shall promote its prescription products exclusively to the medical profession and pharmacists.

Mead Johnson Laboratories may, for specified non-prescription products, engage in medically approved point-of-sale promotion.

Mead Johnson Laboratories shall distribute its products exclusively through drug channels.

Edward Dalton Co.
A DIVISION OF
MEAD JOHNSON & COMPANY

Quality products from nutritional research

A new Division, the Edward Dalton Company, is named in honor of Mead Johnson & Company's founder, Edward Mead Johnson, and his wife, Helena Dalton, who contributed significantly to the early success of the Company.

This new Division will operate according to the following charter:

The Edward Dalton Company shall create and market medically validated, special purpose nutritional products—other than infant formulas and vitamins.

The Edward Dalton Company shall rely on research and product development to achieve leadership through innovation.

The Edward Dalton Company shall be guided by these principles:

(a) Clinical validation of all product claims.

(b) Advertising and promotion that meet a high standard of integrity.

(c) The creation of products of the type and kind which can be promoted for their assistance to and acceptance by physicians in their practice.

The Edward Dalton Company shall market its products:

(a) By advertising and promoting both to physicians and the laity.

(b) By the effective use of all necessary distribution channels.

(Metrecal™ dietary for weight control has been assigned to this division.)

Mead Johnson
International

Symbol of service in medicine

This Division now functions in 85 countries throughout the world. Its charter is as follows:

Mead Johnson International shall develop, direct and expand the international operations of the corporation.

Mead Johnson International shall project world-wide the character, the principles and ethical posture of Mead Johnson & Company.

Mead Johnson & Company initiates this pattern of organization with confidence; with the conviction that the new structure will make it possible for the Company substantially to increase the scope of its contribution to the medical and allied professions and to the public.

Respectfully,

D Mead Johnson

President

In rheumatoid arthritis

when painful muscles relax inflamed joints need less steroid

When you use **SOMACORT** in arthritis, Soma® relaxes stiff muscles and relieves pain so that joint inflammation can be effectively controlled with smaller doses of prednisolone—safer for long-term use. **SOMACORT** saves your patients about 40% when compared to Soma and prednisolone prescribed separately.

Usual dosage: 1 or 2 **SOMACORT** Tablets 4 times daily. **Supplied:** as white, scored tablets, each containing 350 mg. Soma (carisoprodol) and 2 mg. prednisolone. Bottles of 50.

SOMACORT™

anti-inflammatory/muscle relaxant/analgesic

(carisoprodol, Wallace, with prednisolone)

Write for literature and samples.

WALLACE LABORATORIES, Cranbury, New Jersey

DRAMATIC

physical and emotional relief in

ANGINA PECTORIS

'round-the-clock protection against both pain and fear

COROVAS

Tymcaps

COROVAS is a nontoxic, uniform-acting, long-acting vasodilator to control or prevent attacks of angina pectoris. One COROVAS Tymcap upon arising provides up to 12 hours of continuous coronary vasodilation, and another COROVAS Tymcap before the evening meal affords maximum protection against seizures all night. COROVAS alleviates the associated fear of pain. Reduces the need for emergency nitroglycerin. Safe and effective for long-term therapy.

SUPPLIED—Boxes of 60 and 120.

PROLONGED, SUSTAINED ACTION OF VASODILATING PENTAERYTHRITOL TETRANITRATE (PETN) 30 MG., AND SEDATIVE SECOBARBITURIC ACID 50 MG. IN EACH COROVAS TYMCAP.

AMFRE GRANT, INC.
Brooklyn 26, N. Y.

Why do 86% of pediatricians prefer evaporated milk for formula feeding?

Permits the doctor to prescribe for the baby's changing needs

The *only* soft-curd formula milk that is completely *flexible*, evaporated milk permits the dilution and carbohydrate adjustment for the infant's individual needs, for the special requirements of newborns with immature kidney function, and for premature infants.

Carnation is the milk used at many of the largest premature centers in the country. It is the milk used in more hospital formula rooms throughout the world than all other brands combined.

- Proven nutritional value
- Curd tension zero
- Digestible, uniform, safe
- Low allergy incidence
- Saves young parents one-half in formula costs
- Simple to formulate

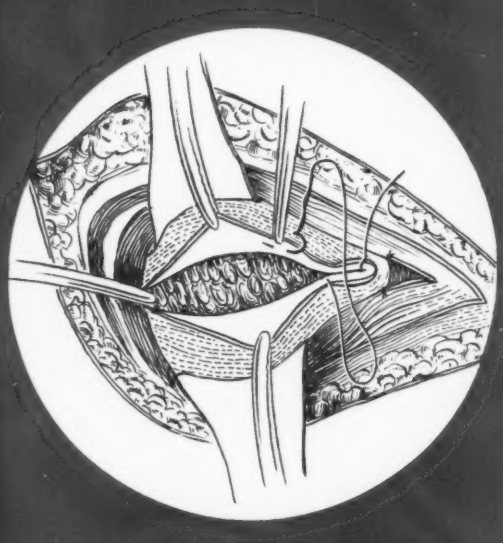
WORLD'S LEADER BY FAR, FOR INFANT FORMULA FEEDING

Carnation maintains a prescription quality that is *not* possible with limited production, facilities or distribution control.

"from Contented Cows"

THE READY-PREPARED EVAPORATED MILK FORMULA

Carnalac is Carnation Evaporated Milk with its added vitamin D, plus carbohydrate. The mother just adds water. Diluted 1:1, Carnalac provides 7.1% carbohydrate and 20 calories per fluid ounce.



Holding blood loss to a minimum is a medical precept. Clinical studies show that lack of capillary integrity causes abnormal bleeding four times as often as coagulation defects.[1,2]

Adrenosem aids capillary integrity by decreasing excessive capillary permeability and promoting retraction of severed capillary ends.

PREOPERATIVELY Adrenosem protects against bleeding from small vessels, thus assuring a clearer operative field and minimizing the need for transfusions.

POSTOPERATIVELY Adrenosem reduces postoperative bleeding.

Adrenosem®*

SALICYLATE

(Brand of carbazochrome salicylate)

Used nonsurgically, Adrenosem controls internal bleeding associated with vascular pathosis, as in peptic ulcer, telangiectasia, purpura, ecchymosis, ulcerative colitis, and others.

Contraindications: None at recommended dosage levels—seven years' clinical use, over 15 million doses, and over 35 published studies prove the safety and effectiveness of Adrenosem.

Supplied: Ampuls, 5 mg. (1 cc.) and 10 mg. (2 cc.) for I.M. injection; Tablets, 1 and 2.5 mg.; Syrup, 2.5 mg./5 cc. (1 tsp.)

1. Haden, R.L., et al.: Ann. N.Y. Acad. Sc. 49:641 (May 11) 1948.
2. Cheraskin, E.: J. Am. Dent. Assn. 58:17 (April) 1959.

*U.S. Pat. Nos. 2581850; 2506294

write for detailed literature

THE S. E. MASSENGILL COMPANY

Bristol, Tennessee · New York · Kansas City · San Francisco

for urinary infections

BACTERIAL CONTROL WITHOUT RESISTANT MUTANTS

As resistance develops to more and more antibacterials, many physicians choose Mandelamine as their antibacterial of first choice in urinary infections. Mandelamine acts *specifically* in the urinary tract, and is effective against most urinary pathogens (including antibiotic-resistant Staph.). Resistant strains have not developed. Sensitization in any form has not occurred, even after prolonged use...and Mandelamine is economical, too.

WARNER CHILCOTT
MORRIS PLAINS, N.J.

MANDELAMINE®

brand of methenamine mandelate

the urine-specific antibacterial

MA-6P03A

Full dosage information, available on request, should be consulted before initiating therapy.

SPECIFIC ACTION...
FROM CARDIOSPASM TO RECTOSPASM

CAPSULES

DACTIL®

the only brand of piperidolate hydrochloride

FOR UPPER G.I. DISTRESS

- "unique" antispasmodic with powerful local anesthetic properties[1]
- "...specific for upper gastrointestinal pain and spasm..."[2]
- "...no toxic effects resulting from the clinical use of this compound have been reported."[1]

TABLETS

CANTIL®

the only brand of mepenzolate bromide

FOR THE COLON

- "...the most effective available colonic anticholinergic..."[3]
- "...provides selective action, confined principally to the lower G.I. tract."[4]
- "...singularly free of the side-effects commonly encountered with anticholinergics."[5]

DACTIL provides most rapid relief of gastrointestinal spasm, biliary spasm, cardiospasm, pylorospasm, spasm of biliary sphincter, biliary dyskinesia, gastric neurosis and irritability, post-gastrectomy syndrome,and is useful as adjunctive therapy in selected inflammatory hypermotility states. DACTIL is almost entirely free of side effects but should be withheld in glaucoma.

Supplied: DACTIL (plain) 50 mg.; and DACTIL with Phenobarbital, 50 mg., with 16 mg. phenobarbital (may be habit forming). Bottles of 50.

CANTIL is highly effective in ulcerative colitis, irritable colon, mucous colitis, spastic colitis, diverticulitis, diverticulosis, malabsorption syndrome, rectospasm, diarrhea following G.I. surgery, bacillary and parasitic disorders.

The effect of CANTIL on the bladder is negligible, but caution should be observed in patients with prostatic hypertrophy. As with all anticholinergics, it should be withheld in glaucoma.

Supplied: CANTIL (plain) 25 mg.; and CANTIL with Phenobarbital, 25 mg., with 16 mg. of phenobarbital (may be habit forming). Bottles of 100 and 250.

References: (1) Rider, J. A.; Moeller, H. C., and Lee, J.: Am. J. Gastroenterol. *32*:714, 1959. (2) Modern Drug Encyclopedia and Therapeutic Index, ed. 6, New York, Drug Publications, Inc., 1955, p. 281. (3) Kleckner, M. S., Jr.: J. Louisiana M. Soc. *103*:359, 1956. (4) Kleckner, M. S., Jr.: Clin. Res. Proc. *5*:19, 1957. (5) Riese, J. A.: Am. J. Gastroenterol. *28*:541, 1957.

72661

LAKESIDE

"The polycarbophil–thihexinol combination [Sorboquel] often alleviated diarrhea after other drugs, including opiates, had been ineffectual."[1]

new

for truly effective control of chronic and acute diarrhea

A 30-year-old male with a history of functional diarrhea of one month's duration. [In a 7-hour control film measuring transit time (not shown), the barium was in the terminal ileum.] The above 24-hour film demonstrates combined antimotility action of thihexinol methylbromide and the hydrosorptive action of polycarbophil. (Note the particulate nature of the swollen polycarbophil.)

"...the demonstrated inhibition of jejunal motility without a marked delay of gastric emptying is remarkable. In our experience, such selective depression of enteral motor activity has not been produced by other anti-peristaltic drugs."[1]

unexcelled therapeutic response with Sorboquel Tablets[1-8]

	No. of Patients	Response: Excellent	Response: Good	Response: Poor
Chronic Diarrhea*	485	335	76	74
		84.7%		15.3%
Acute Diarrhea**	332	288	22	22
		93.4%		6.6%

*Includes irritable bowel syndrome, regional enteritis, diverticulitis, ulcerative colitis, postantibiotic enteritis, malabsorption syndrome, radiation proctitis, surgically short-circuited intestinal states. **Includes nonspecific gastroenteritis, enteritis, enterocolitis.

DUAL ACTION Sorboquel T.M. TABLETS

(polycarbophil–thihexinol methylbromide)

effective . . . "in a group of patients notoriously refractory to any type of drug."[2]

SORBOQUEL TABLETS combine two unique and hitherto unavailable antidiarrheal agents—polycarbophil and thihexinol methylbromide. Acting together, these components in SORBOQUEL *absorb* free fecal water and *quell* hypermotility and associated spasm to an exceptional degree.

A totally new agent in convenient tablet form

SORBOQUEL DOSAGE: For older children and adults, initial dosage of one SORBOQUEL TABLET q.i.d. is usually adequate. Severe diarrheas may require six, or even eight, tablets in divided daily doses. (Dosages exceeding six tablets a day should not be employed over prolonged periods.)

SIDE EFFECTS: The incidence of side effects at recommended dosage is negligible. (The usual precautions when using parasympatholytic agents should be observed.) *Complete information regarding the use of* SORBOQUEL TABLETS *is available on request.*

SUPPLIED: SORBOQUEL TABLETS, bottles of 50 and 250. Each tablet contains 0.5 Gm. polycarbophil and 15 mg. thihexinol methylbromide.

REFERENCES: 1. Winkelstein, A.: Am. J. Digestive Dis.: In press. 2. Berkowitz, D.: Personal communication. 3. Hock, C. W.: Med. Times 88:320 (March) 1960. 4. Lind, H. E.: Personal communication. 5. Seneca, H.: In press. 6. Riese, J. A.: Personal communication. 7. Gilbert, A. S.; Schwartz, I. R., and Matzner, M. J.: Submitted for publication. 8. Personal communications to Medical Department, White Laboratories, Inc. *Additional bibliography*: 9. Pimparker, B. D.; Paustian, F. F.; Roth, J. L. A., and Bockus, H. L.: To be published. 10. Texter, E. C.: Personal communication. 11. Clinical Reports to Medical Department, White Laboratories, Inc. 12. Grossman, A. J.; Batterman, R. C., and Leifer, P.: J. Am. Geriat. Soc. 5:187 (Feb.) 1957. 13. McHardy, G.; Browne, D.; McHardy, R.; Bodet, C., and Ward, S.: Am. J. Gastroenterol. 24:601 (Dec.) 1955. 14. Shay, H.: Personal communication. 15. Hirsh, H.: Personal communication. 16. Bercovitz, Z. T.: J. Am. Geriat. Soc. 5:940 (Nov.) 1957.

WHITE LABORATORIES, INC. *Kenilworth, N. J.*

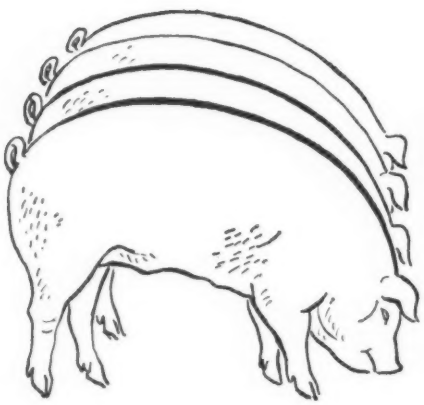
MEAT TYPE ANIMALS

A Scientific Development

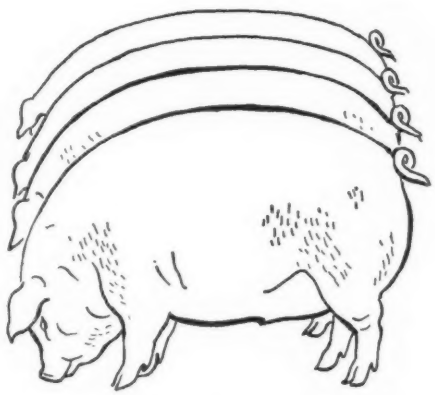
Can you remember when "fat" was an ear mark of blue ribbon hogs, steers and lambs?

Today, after years of breeding and feeding techniques, through the teamwork of farmers, agricultural scientists and meat processors, firm meat-type animals have been developed.

Meat type animals, more lean meat and less fat, comply with medical diet requirements. Roasts, chops and steaks, offered at meat counters are leaner, closer trimmed, from meat type animals, bred and fed for a higher quality protein ratio.



MEAT TYPE



FAT TYPE

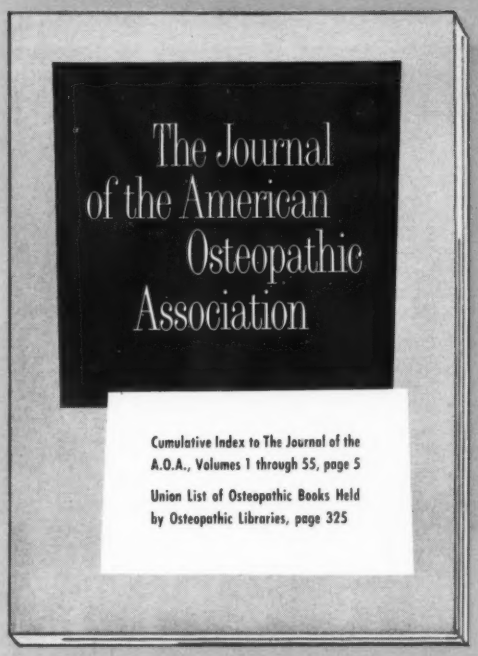
A Great Advance in Animal Agriculture!

The nutritional statements made in this advertisement have been reviewed by the Council on Foods and Nutrition of the American Medical Association and found consistent with current authoritative medical opinion.

AMERICAN MEAT INSTITUTE

MAIN OFFICE, CHICAGO • MEMBERS THROUGHOUT THE NATION

A-50

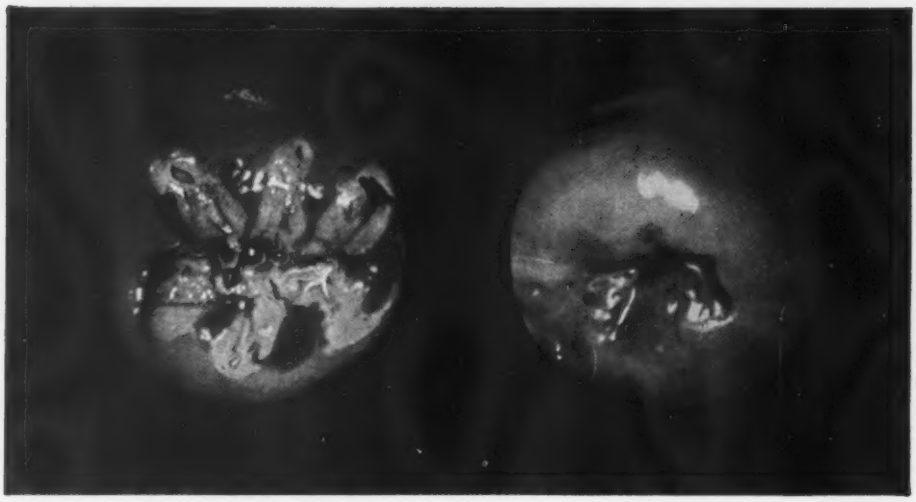

The Journal of the American Osteopathic Association
Cumulative Index to The Journal of the A.O.A., Volumes 1 through 55, page 5
Union List of Osteopathic Books Held by Osteopathic Libraries, page 325

Now available the first 50-year Cumulative Index and Union List

A practical and long-needed aid to the osteopathic physician, student, historian, and research worker, the Cumulative Index lists original articles and editorials published in **The Journal of the American Osteopathic Association** from September, 1901, to August, 1956. The Union List includes titles and authors of the books concerned with osteopathic medicine and books written by members of the osteopathic profession, which are in the libraries of the osteopathic colleges and the A.O.A.

The price is $5.00. This low price has been made possible by the contribution from The Foundation for Research of the New York Academy of Osteopathy toward the cost of production.

Send your order to the **American Osteopathic Association,** 212 East Ohio Street, Chicago 11, Illinois



For your OB-GYN patients: fight infection, facilitate healing

Administered before and after cervicovaginal surgery, irradiation, delivery, and office procedures such as cauterization, FURACIN *helps to provide a shorter, more comfortable convalescence. Infection is promptly controlled; discharge, irritation and malodor reduced; healing hastened.* FURACIN *is highly active in the presence of exudates, yet is nontoxic to regenerating tissue, does not induce significant bacterial resistance nor encourage monilial overgrowth.*

FURACIN®

brand of nitrofurazone

Vaginal Suppositories

FURACIN 0.3% in a water-miscible base which melts at body temperature. Box of 12, each 2 Gm. suppository hermetically sealed in yellow foil.

Cream

FURACIN 0.2% in a fine cream base, water-miscible and self-emulsifying in body fluids. Tubes of 3 oz., with plastic plunger-type vaginal applicator.

THE NITROFURANS—
a *unique* class of antimicrobials
EATON LABORATORIES, NORWICH, NEW YORK

but she needs **your** help **in planning her family**

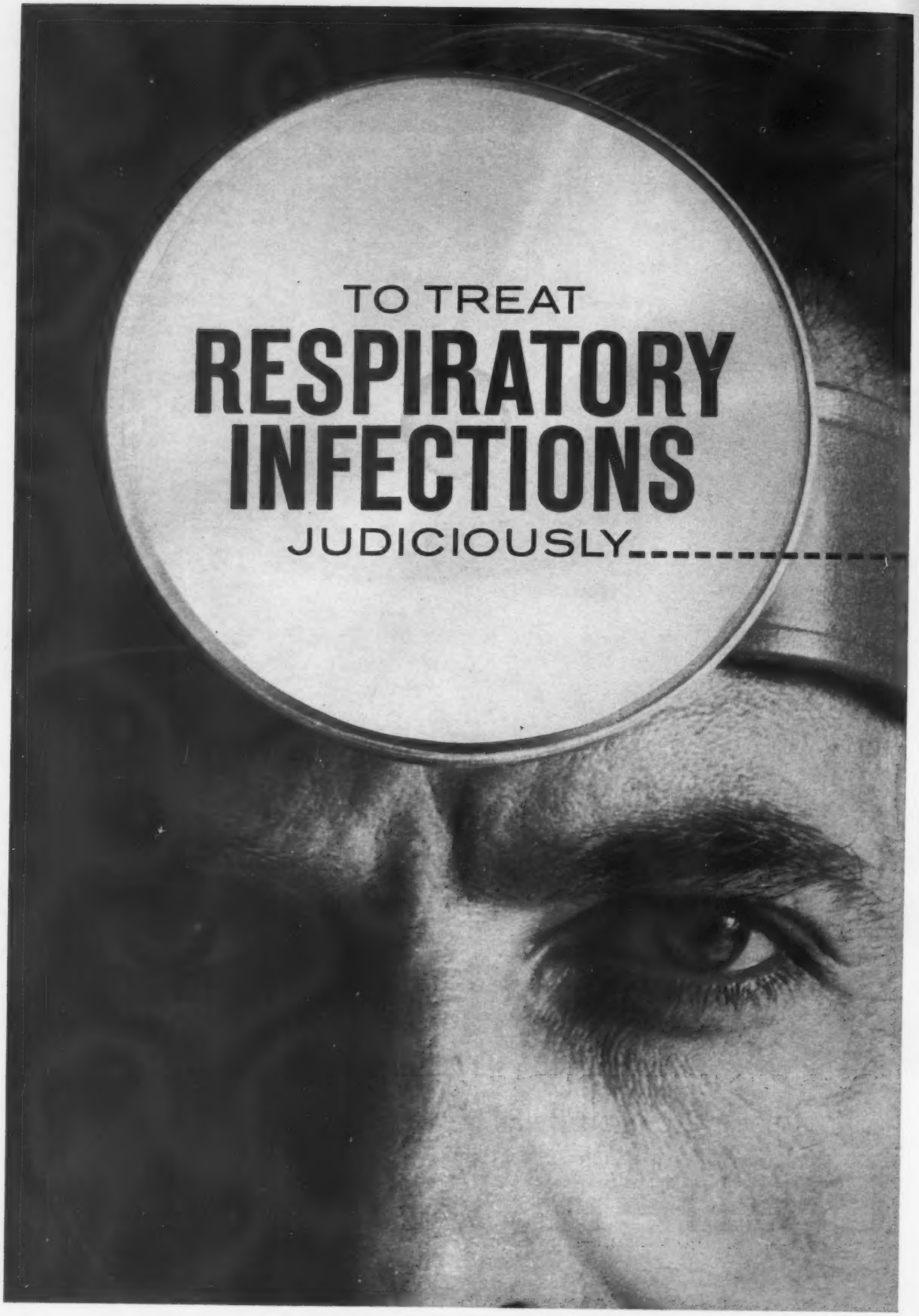
Delfen®
VAGINAL CREAM

THE MODERN CHEMICAL SPERMICIDE

Preceptin®
VAGINAL GEL

THE SPERMICIDAL GEL WITH BUILT-IN BARRIER

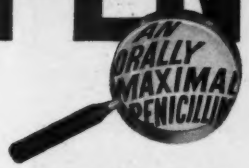
PRESCRIBED WITH CONFIDENCE FOR SIMPLE, EFFECTIVE CONTRACEPTION


TO TREAT
RESPIRATORY
INFECTIONS
JUDICIOUSLY

When it's penicillin-susceptible
and the patient is not allergic
Use an orally maximal penicillin

MAXIPEN®

potassium phenethicillin



Consistent dependable therapeutic response through maximal absorption, maximal serum concentration and longer duration of inhibitory antibiotic levels for less susceptible organisms.

Available as Maxipen Tablets, 125 mg. and 250 mg.; Maxipen for Oral Solution, 125 mg. per 5 cc. of reconstituted liquid.

Literature on request

or

When you hesitate to use penicillin
(eg. possible bacterial resistance or allergic patient)

You can count on

TAO®

triacetyloleandomycin

Extends the Gram-positive spectrum of usefulness to include many staphylococci resistant to one or more of the commonly used antibiotics...*narrows* the spectrum of side effects by avoiding many allergic reactions and changes in intestinal bacterial balance.

Available as Tao Capsules, 250 and 125 mg.; Tao Oral Suspension, 125 mg. per 5 cc; Tao Pediatric Drops, 100 mg. per cc. of reconstituted liquid; Intramuscular or Intravenous as oleandomycin phosphate. Other Tao formulations also available: Tao®-AC (Tao, analgesic, antihistaminic compound) Tablets; Taomid® (Tao with Triple Sulfas) Tablets, Oral Suspension.

Literature on request

and for nutritional support **VITERRA®** vitamins and minerals
Formulated from Pfizer's line of fine pharmaceutical products

New York 17, N. Y., Division, Chas. Pfizer & Co., Inc.
Science for the World's Well-Being™

HEALTH CAN BE PURCHASED FOR DISTRIBUTION TO YOUR PATIENTS AND BUSINESS ASSOCIATES ON A MONTH-TO-MONTH CONTRACT BASIS

"Confidence" is a word of great importance in the healing arts, as every doctor well knows. Both the doctor's confidence in his own ability and the patient's confidence in the doctor are essential to the physician's effectiveness.

One of the best tools for building confidence is understanding. The patient who understands the training which his osteopathic doctor has received and who is familiar with the standards of practice and hospital care which the osteopathic profession maintains will have confidence in the health care which he receives.

HEALTH magazine, published by the American Osteopathic Association, is an excellent vehicle for providing this understanding. HEALTH is written for the layman and provides him with the information he seeks about disease, modern health care techniques and new scientific developments.

HEALTH explains the essential facts about the osteopathic profession—its colleges, hospitals, specialties and research programs. HEALTH is a friendly, informative and accurate link between the osteopathic profession and the interested layman.

Cost for each copy, including envelope, is 10c.

Forward your list of recipients.

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212 EAST OHIO STREET
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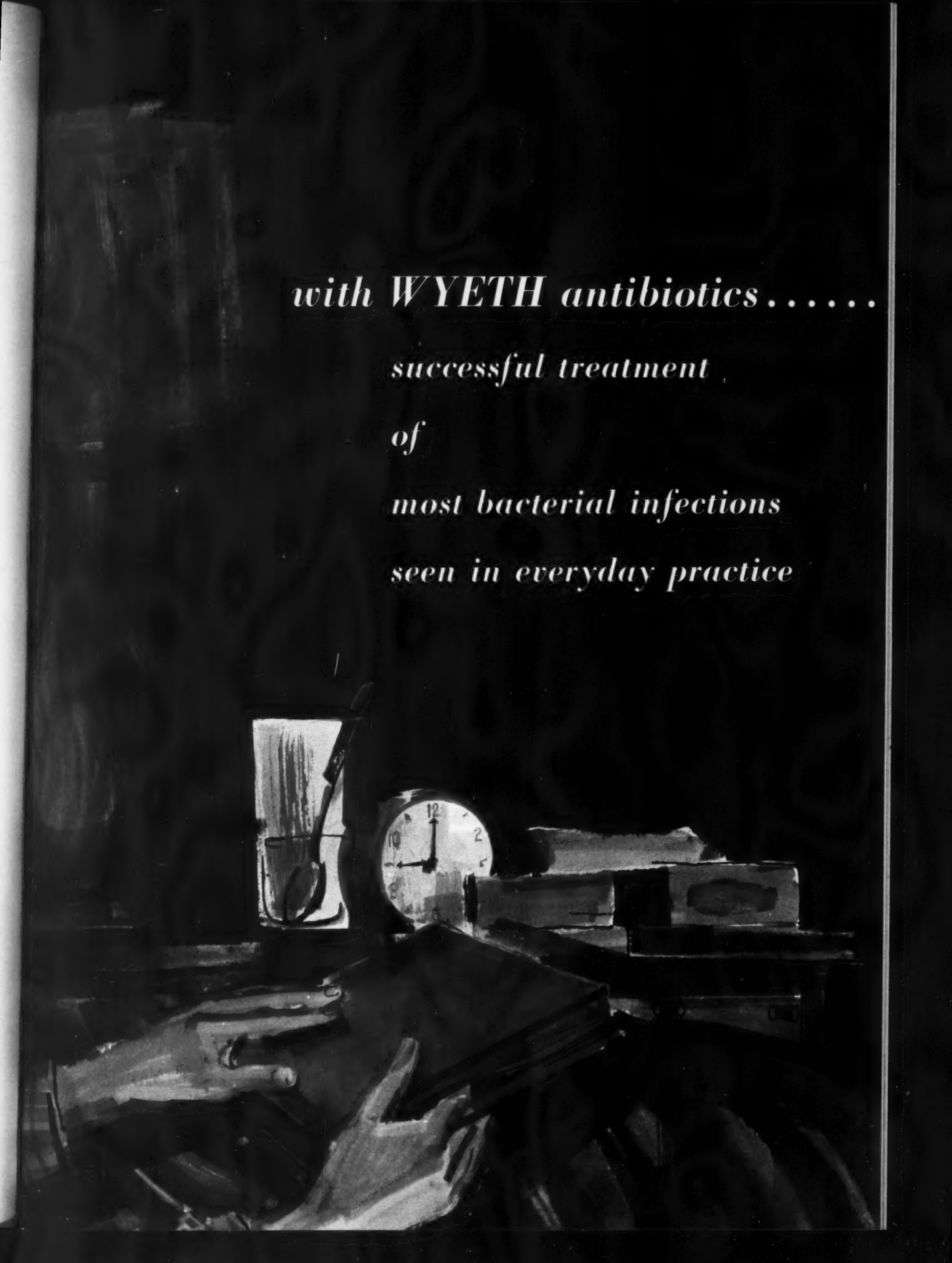

with WYETH antibiotics.....
successful treatment
of
most bacterial infections
seen in everyday practice

pleasant-tasting
pediatric penicillin

sent him back to school...

ORAL SUSPENSION

BICILLIN®

Benzathine Penicillin G, Wyeth

reliable absorption and effect
infrequent dosage requirement
readily acceptable

Cherry flavor—300,000 units per 5 cc. teaspoonful, bottles of 2 fl. oz.

Custard flavor—150,000 units per 5 cc. teaspoonful, bottles of 2 fl. oz.

Although infrequent, adverse reactions to many modern drugs may occur. For information on limitations, administration, and prescribing of BICILLIN, see descriptive literature or current Direction Circular.

Wyeth Laboratories Philadelphia 1, Pa.

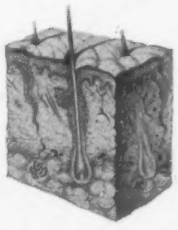
Wyeth® SERVICE TO MEDICINE

well tolerated...

and it cleared her pustular acne...

CYCLAMYCIN®

Triacetyloleandomycin, Wyeth



Reliable oral antibiotic for the treatment of infections caused by most gram-positive organisms, including many staphylococci resistant to other antibiotics. The bacterial spectrum of CYCLAMYCIN reduces risk of diarrhea and gastrointestinal superinfections.

Whether in capsules or in pleasant-tasting suspension, CYCLAMYCIN is not inactivated by gastric acid, and is well tolerated even by some patients reacting adversely to other antibiotics.

SUPPLIED: Oral Suspension, 125 mg. per 5 cc. teaspoonful, bottles of 2 fl. oz. Capsules, 125 mg. and 250 mg., vials of 36.

Although infrequent, adverse reactions to many modern drugs may occur. For further information on limitations, administration and prescribing of CYCLAMYCIN, see descriptive literature or current Direction Circular.

Wyeth Laboratories Philadelphia 1, Pa.

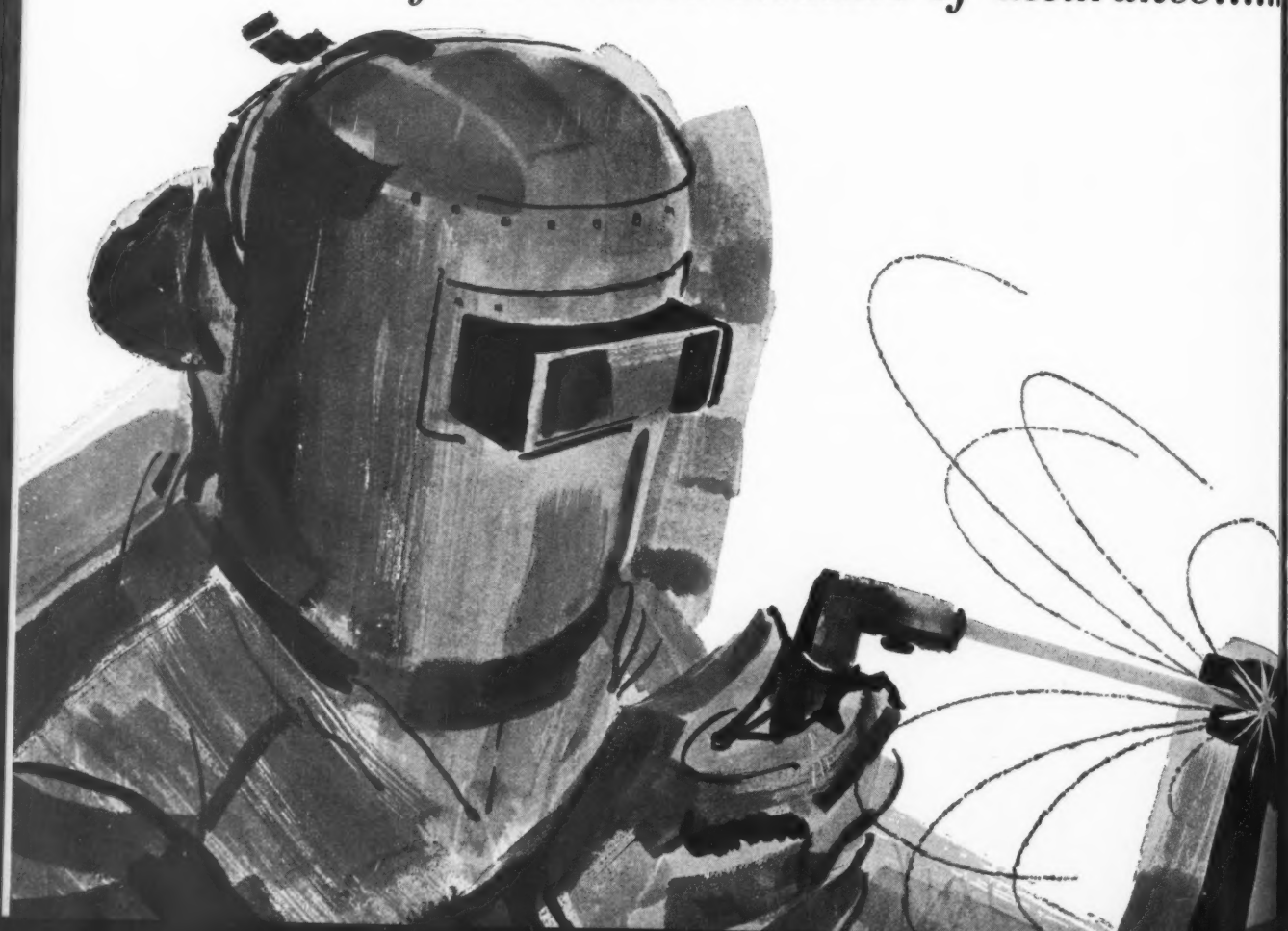
high-performance
oral antibiotic

quickly returned him to his job . . .

DARCIL®

Phenethicillin Potassium, Wyeth

for an added measure of assurance.....



„reliable absorption

consistently high peak serum levels

lethal action against the commonly encountered pneumococci, streptococci, and gonococci

lethal action also against clinical isolates of certain Staph. aureus resistant to other antibiotics

Wyeth Laboratories Philadelphia 1, Pa.

Wyeth ® SERVICE TO MEDICINE

Reliable Absorption Promises Consistent Effectiveness

Numerous investigators have shown that the absorption of oral antibiotics varies not only from subject to subject, but also in the same subject at different times. To provide a high degree of therapeutic assurance, therefore, requires an antibiotic that is on the average well absorbed. High absorption, of course, implies high serum concentrations which, in turn, means an increased likelihood that tissues will be supplied with adequate antibiotic.

The absorption of phenethicillin potassium (DARCIL) has been investigated both by studies of serum concentrations and urinary excretion rates.

Maximum Absorption Indicated by Prompt, High Peak Serum Levels. Blood level studies demonstrate the reliable absorption of phenethicillin potassium. In studies employing single oral doses of 250 mg. of phenethicillin potassium, Morigi and associates[1] determined that peak serum levels of the antibiotic were attained within an hour after ingestion; assayable levels were maintained for 4 to 6 hours. Knudsen and Rolinson,[2] among others, have also demonstrated that phenethicillin potassium produces unusually high blood levels.

Serum Levels Directly Reflect Dose Levels. Cronk and associates[3] performed an interesting experiment that emphasizes the absorption of phenethicillin potassium. Phenethicillin potassium was given to healthy adults in progressively increasing doses. *The resultant serum levels were directly proportional to the doses given.*

Average Serum Concentration ½ Hr. after Administration

Dose (Mg.)	*Mcg./Ml.*	*Units/Ml.*
134	2.72	4.35
268	4.28	6.85
536	8.15	13.0
804	12.3	19.7
1072	19.1	30.6
2144	39.6	63.4

Therefore, when treating a patient with a severe infection, the physician may, by adequately increasing the dose, produce serum concentrations that should be sufficiently great to affect less susceptible pathogens.

Excellent Absorption Indicated by Urinary Excretion Studies. Knudsen and Rolinson,[2] in a study of 9 fasting subjects, reported that a mean of 60% of the dose of phenethicillin potassium was excreted in the urine within 6 hours after ingestion of the drug. Cronk and associates[3] found a lower, although still high, rate: 24 to 35% of a given dose of phenethicillin potassium was excreted in the first 6 hours; almost three-quarters of this percentage was excreted in the first 2 hours alone. Morigi and associates[1] collected urines of 10 healthy subjects at 6-hour intervals following a dose given one hour before meals. As can be seen, the excretory rate of phenethicillin potassium reflects prompt absorption and utilization.

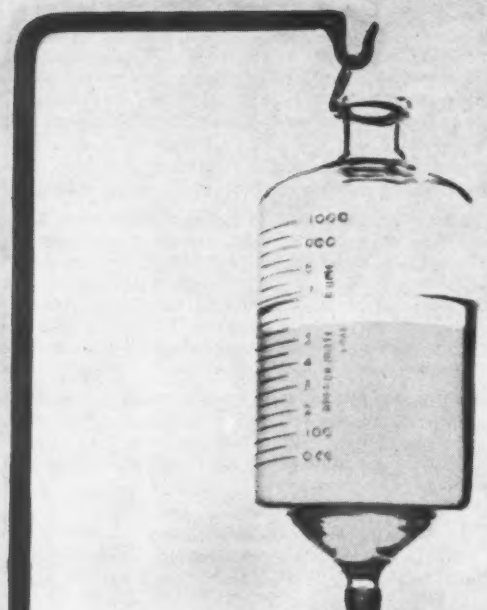
Average Urine Concentrations Following a Single Oral Dose of 250 mg. Phenethicillin Potassium

	0-6 Hrs.	*6-12 Hrs.*	*12-24 Hrs.*
phenethicillin potassium	30.9%	0.4%	0%

References: 1. Morigi, E.M.E., Wheatley, W.B., and Albright, H.: Antibiotics Ann., 1959-60, pp. 127-132. 2. Knudsen, E.T., and Rolinson, G.N.: Lancet *2*:1105 (Dec. 19) 1959. 3. Cronk, G.A., Naumann, D.E., Albright, H., and Wheatley, W.B.: Antibiotics Ann., 1959-1960, pp. 133-145.

SUPPLIED: DARCIL Tablets (peach colored, scored)—250 mg. (400,000 units), 125 mg. (200,000 units) phenethicillin potassium, bottles of 36 and 100. DARCIL for Oral Solution—125 mg. (200,000 units) phenethicillin potassium per 5 cc. teaspoonful, bottle of powder to be reconstituted to 60 cc.

Although infrequent, adverse reactions to many modern drugs may occur. For further information on limitations, administration and prescribing of DARCIL, see descriptive literature or current Direction Circular.



introducing

a completely new
water-soluble salt
of FURADANTIN

NEW FURADANTIN® SODIUM

brand of nitrofurantoin

for Intravenous Use
where oral medication is not feasible

for treating
genitourinary infections, such as

pyelonephritis, pyelitis, cystitis, prostatitis

systemic, bacterial infections

has been lifesaving in certain instances

(COPY OF PACKAGE INSERT)

FURADANTIN®

brand of nitrofurantoin

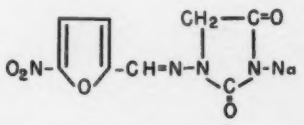
SODIUM

STERILE

For Intravenous Use

ACTIVE INGREDIENT: Each vial contains sufficient material to permit withdrawal of 180 mg. Furadantin, as the sodium salt.

Furadantin Sodium is a synthetic antibacterial agent, one of the antimicrobial nitrofurans, having the following structure:



1-(5-nitrofurfurylideneamino)-hydantoin sodium

INDICATIONS: The antibacterial spectrum of Furadantin encompasses gram-negative organisms such as E. coli, K. pneumoniae and certain strains of Proteus sp., Pseudomonas sp., and Aerobacter sp.; as well as gram-positive organisms such as staphylococci, streptococci, pneumococci, Clostridium sp., B. subtilis.

Furadantin Sodium is indicated in genitourinary infections such as pyelonephritis, pyelitis, cystitis and prostatitis, when the oral form is not feasible. It is also indicated in systemic bacterial infections with the exception of septicemias (bacteremias) unless other therapy has failed or until further work has demonstrated its activity in this condition caused by organisms sensitive in vitro to Furadantin.

In genitourinary tract infections, peroral therapy should replace intravenous when possible. It is not intended to replace surgery when mechanical obstruction or stasis is present.

ADMINISTRATION AND DOSAGE: The crystals must be dissolved just prior to use as follows: Add 15 cc. of 5% Dextrose Injection, USP, or Water for Injection, USP, to the vial of dry sterile Furadantin Sodium. Empty the syringe forcefully. Shake well to insure complete solution.

FURTHER DILUTION IS REQUIRED
BASED UPON THE PATIENT'S WEIGHT:

Patients weighing over 120 pounds. The recommended dose is 180 mg. of Furadantin in 500 cc. of diluent, twice daily. This is prepared as follows: Withdraw the solution of 180 mg. of Furadantin from the vial and add it to 500 cc. of 5% Dextrose in water, 5% Dextrose in Saline, Normal Saline or 1/6 molar Sodium Lactate intravenous solution. This final solution is to be given by intravenous drip at the usual rate.

Patients weighing under 120 pounds. The recommended dose is 3 mg./lb. of body weight per day divided in two equal doses. This is calculated on the basis that when the Furadantin Sodium in each vial is dissolved in 15 cc. of diluent, each cc. of solution represents 12 mg. of Furadantin. To prepare the final solution, each cc. of the initial Furadantin dilution should be added to a minimum of 33 cc. of parenteral fluid.

CAUTION: In the presence of impairment of renal function or acidosis administer Furadantin Sodium intravenously with caution as with any potent antibacterial agent. If employed under such circumstances the blood pH, CO_2 content or combining power and urea nitrogen or non-protein nitrogen should be followed closely.

The occurrence of a few cases of hemolytic anemia during Furadantin therapy has appeared in the literature.* A small percentage of negroes and ethnic groups of Mediterranean and Near-Eastern origin has an intrinsic abnormality of the red blood cells. As a result, hemolysis may occur with fava beans and certain drugs, such as primaquine. Thus it is advisable to closely observe such patients receiving Furadantin and to discontinue its administration if there is any indication of this condition developing.

SIDE REACTIONS: If nausea or emesis occur, these may be minimized by slowing the rate of administration, or by decreasing the dosage.

Sensitization occurs rarely in the form of an erythematous, maculopapular cutaneous eruption or urticaria. This is readily controlled by discontinuing treatment.

Occasionally a patient may show minor side reactions such as headache or malaise. No stomatitis, colitis, proctitis, anal pruritus or hematopoietic, renal or hepatic toxicity, have been reported with Furadantin Sodium.

PACKAGING: Sterile 20 cc. vials, containing one adult dose of crystalline sterile Furadantin Sodium (equivalent to 180 mg. of Furadantin).

CAUTION: Federal Law prohibits dispensing without prescription.

NOTE: DO NOT ADMINISTER INTRAMUSCULARLY. DO NOT USE WITHOUT DILUTING. MIX JUST PRIOR TO USE.

*West, M. and Zimmerman, H. H.: Hemolytic Anemia in Patient Receiving Nitrofurantoin (Furadantin), J.A.M.A. 162:637 (Oct. 13) 1956. Kimbro, E. L., Jr.: Sachs, M. F.; and Torbert, J. V. Jr.: Mechanism of Hemolytic Anemia Induced by Nitrofurantoin (Furadantin), Fed. Proc. 16:312 (Mar.) 1957.

EATON LABORATORIES
Division of The Norwich Pharmacal Company
NORWICH, NEW YORK

THE NITROFURANS—a *unique* class of antimicrobials

ROMILAR CF will stop that cough by prompt, specific control of the cough reflex—without narcotic hazards or complications. Relief begins within 15 to 30 minutes, lasts for as long as 6 hours. ROMILAR CF treats the entire cough and cold complex—nasal and bronchial congestion, allergic manifestations, fever, headache and myalgia, as well as cough. Romilar® Hydrobromide—brand of dextromethorphan hydrobromide.

Non-narcotic. No prescription required. Syrup now available in new 3-oz bottle size. Capsules in bottles of 100.

ROMILAR CF

for maximum cough relief

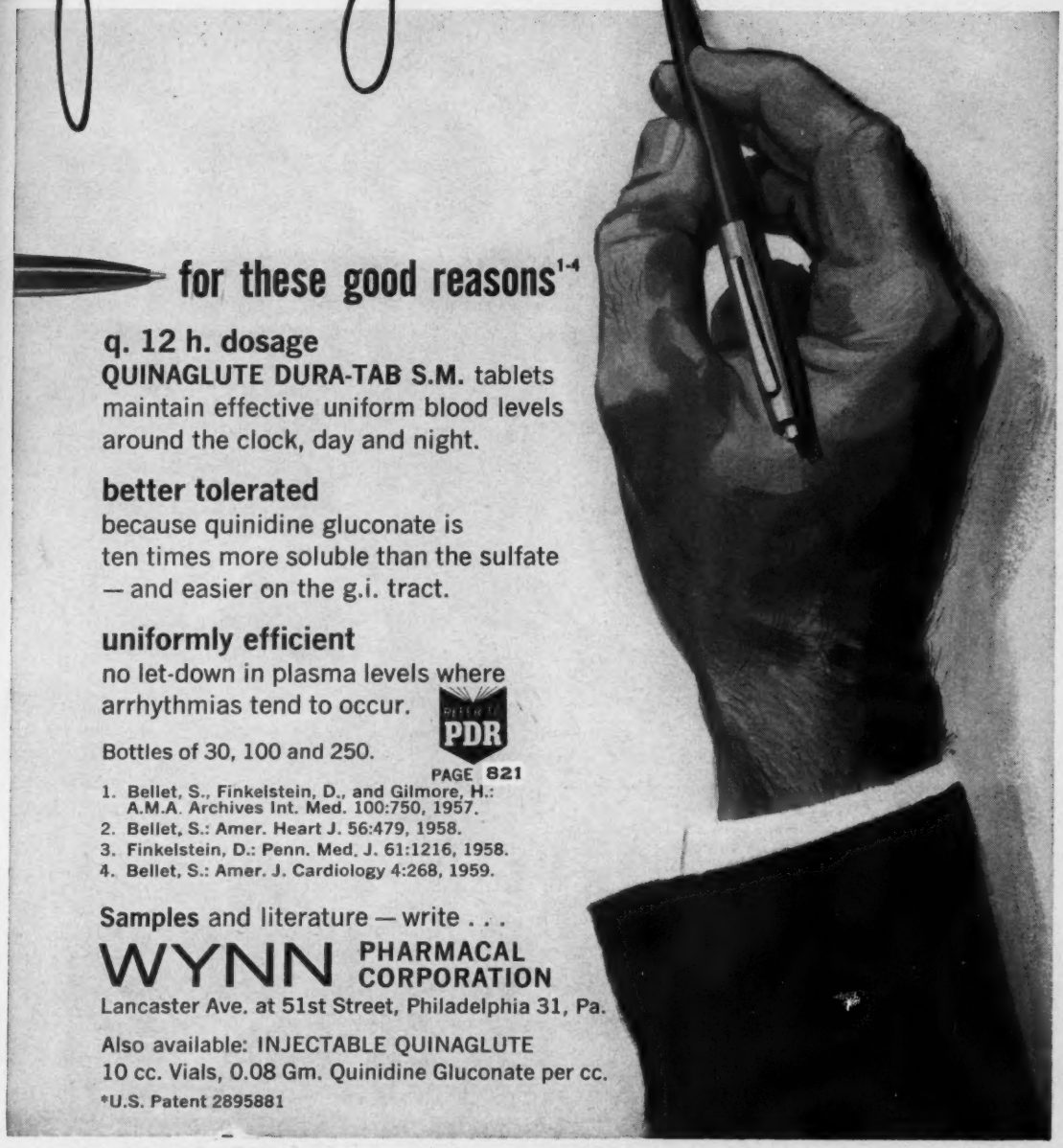
ROCHE LABORATORIES • Division of Hoffmann-La Roche Inc.

A-44

NOW WIDELY PRESCRIBED QUINIDINE THERAPY IN CARDIAC ARRHYTHMIAS

quinaglute T.M. dura-tab® s.m.

exclusive oral
Sustained Medication*
Quinidine Gluconate (5 gr.)



for these good reasons[1-4]

q. 12 h. dosage
QUINAGLUTE DURA-TAB S.M. tablets maintain effective uniform blood levels around the clock, day and night.

better tolerated
because quinidine gluconate is ten times more soluble than the sulfate — and easier on the g.i. tract.

uniformly efficient
no let-down in plasma levels where arrhythmias tend to occur.

PDR PAGE 821

Bottles of 30, 100 and 250.

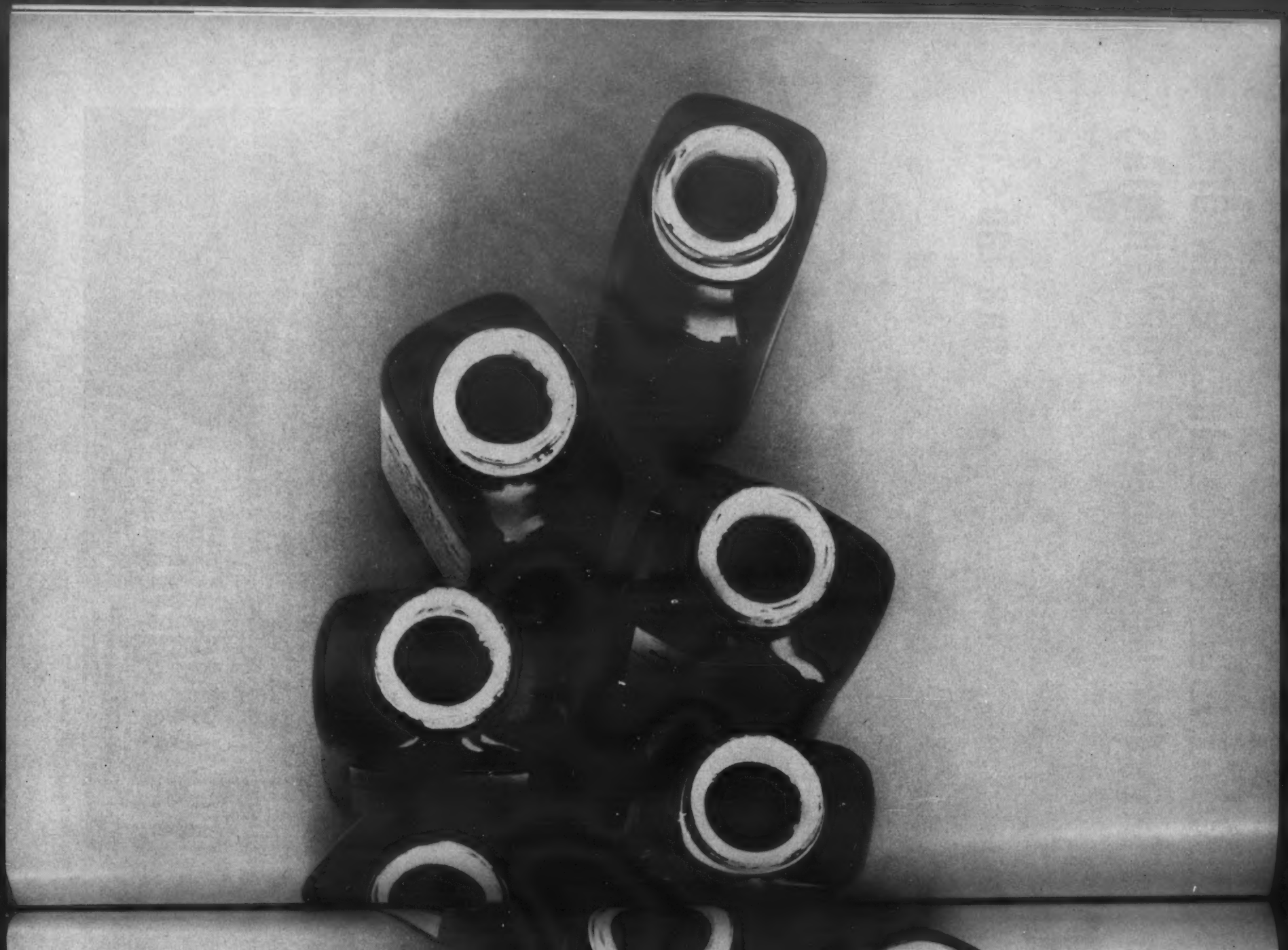
1. Bellet, S., Finkelstein, D., and Gilmore, H.: A.M.A. Archives Int. Med. 100:750, 1957.
2. Bellet, S.: Amer. Heart J. 56:479, 1958.
3. Finkelstein, D.: Penn. Med. J. 61:1216, 1958.
4. Bellet, S.: Amer. J. Cardiology 4:268, 1959.

Samples and literature — write . . .

WYNN PHARMACAL CORPORATION
Lancaster Ave. at 51st Street, Philadelphia 31, Pa.

Also available: INJECTABLE QUINAGLUTE
10 cc. Vials, 0.08 Gm. Quinidine Gluconate per cc.

*U.S. Patent 2895881



"wearability"

NO TASTE FATIGUE
EXCELLENT RESULTS
NO CONSTIPATION

the most widely prescribed and most wearable of all antacids

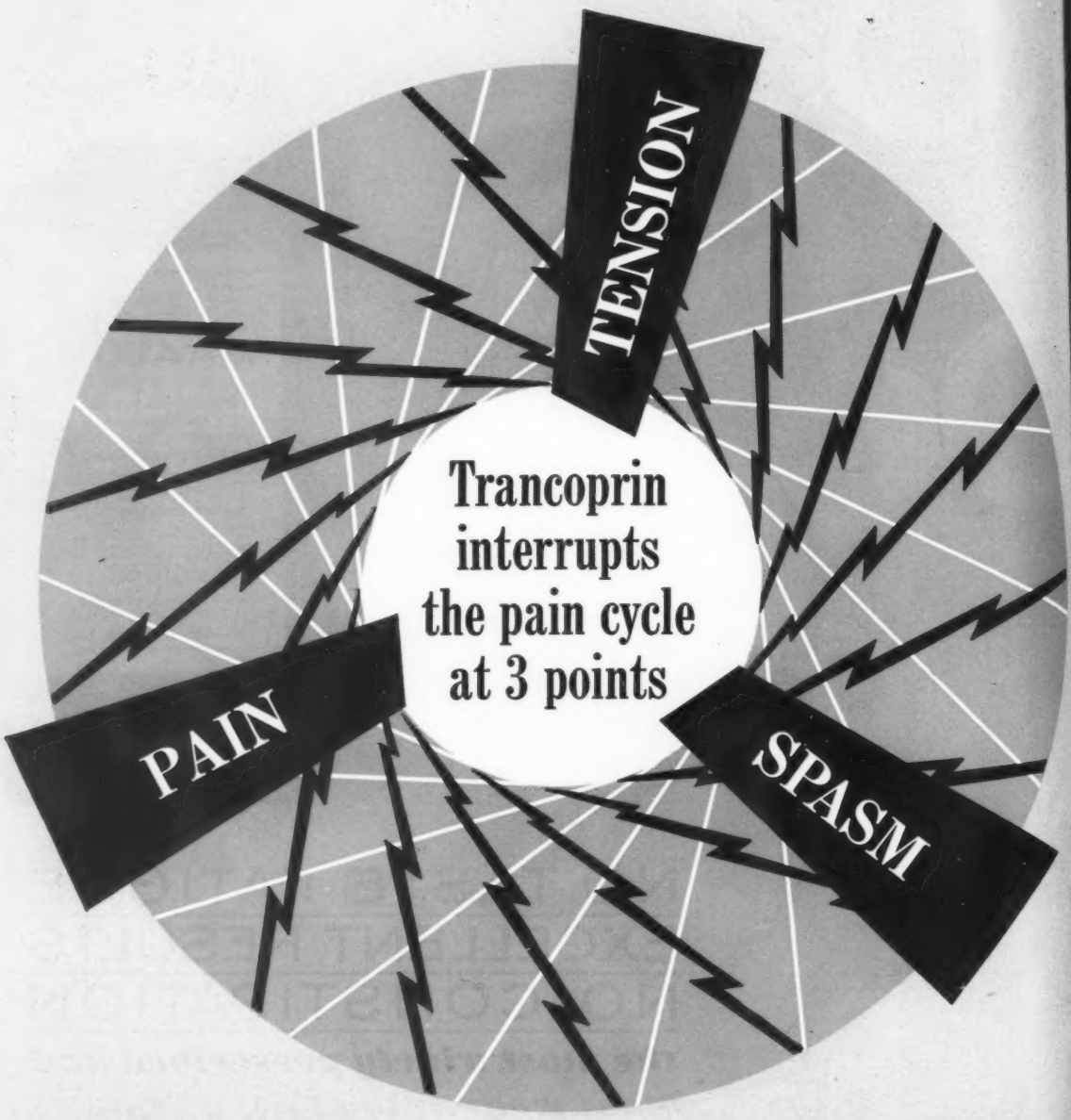
suspension tablets

announcing...

Trancoprin®

acetylsalicylic acid (300 mg.) and chlormezanone (50 mg.)

Tablets



a broad spectrum non-narcotic analgesic

Trancoprin, a new analgesic, not only raises the pain perception threshold but, through its chlormezanone component, also relaxes skeletal muscle spasm[1-6] and quiets the psyche.[2,3-5,7]

The effectiveness of Trancoprin has been demonstrated clinically[8] in a number of patients with a wide variety of painful disorders ranging from headache, dysmenorrhea and lumbago to arthritis and sciatica. In a series of 862 patients,[8] Trancoprin brought excellent or good relief of pain to 88 per cent of the group. In another series,[9] Trancoprin was administered in an industrial dispensary to 61 patients with headache, bursitis, neuritis or arthritis. The excellent results obtained prompted the prediction that Trancoprin "... will prove a valuable and safe drug for the industrial physician."[9]

Exceptionally Safe

No serious side effects have been encountered with Trancoprin. Of 923 patients treated with Trancoprin, only 22 (2.4 per cent) experienced any side effects.[8,9] In every instance, these reactions, which included temporary gastric distress, weakness or sedation, were mild and easily reversed.

Indications

Trancoprin is recommended for more comprehensive control of the pain complex (pain → tension → spasm) in those disorders in which tension and spasm are complicating factors, such as: headaches, including tension headaches / premenstrual tension and dysmenorrhea / low back pain, sciatica, lumbago / musculoskeletal pain associated with strains or sprains, myositis, fibrositis, bursitis, trauma, disc syndrome and myalgia / arthritis (rheumatoid or hypertrophic) / torticollis / neuralgia.

Dosage

The usual adult dosage is 2 Trancoprin tablets three or four times daily. The dosage for children from 5 to 12 years of age is 1 tablet three or four times daily. Trancoprin is so well tolerated that it may be taken on an empty stomach for quickest effect. The relief of symptoms is apparent in from fifteen to thirty minutes after administration and may last up to six hours or longer.

How Supplied

Each Trancoprin tablet contains 300 mg. (5 grains) of acetylsalicylic acid and 50 mg. of chlormezanone [Trancopal® brand]. Bottles of 100 and 1000.

Trancoprin Tablets / **non-narcotic analgesic**

References: 1. DeNyse, D. L.: *M. Times* 87:1512, Nov., 1959. 2. Ganz, S. E.: *J. Indiana M. A.* 52:1134, July, 1959. 3. Gruenberg, Friedrich: *Current Therap. Res.* 2:1, Jan., 1960. 4. Kearney, R. D.: *Current Therap. Res.* 2:127, April, 1960. 5. Lichtman, A. L.: *Kentucky Acad. Gen. Pract. J.* 4:28, Oct., 1958. 6. Mullin, W. G., and Epifano, Leonard: *Am. Pract. & Digest Treat.* 10:1743, Oct., 1959. 7. Shanaphy, J. F.: *Current Therap. Res.* 1:59, Oct., 1959. 8. Collective Study, Department of Medical Research, Winthrop Laboratories. 9. Hergesheimer, L. H.: An evaluation of a muscle relaxant (Trancopal) alone and with aspirin (Trancoprin) in an industrial medical practice, to be submitted.

Winthrop LABORATORIES, New York 18, N. Y.

Trancoprin and Trancopal (brand of chlormezanone) trademarks reg. U. S. Pat. Off.

CHYMOLASE

CHYMOTRYPSIN, W-T
IN AQUEOUS GELATIN SOLUTION

for reduction of local inflammation, edema, congestion...

INDICATIONS

CIRCULATORY DISORDERS
Phlebothrombosis and thrombophlebitis.

ACCIDENTAL INJURIES
Sprains, strains, bruises, hematomas.

BRONCHOPULMONARY DISORDERS
Bronchiectasis, bronchial asthma, emphysema.

ACUTE INFLAMMATION
Bursitis, arthritis and cellulitis.

TISSUE NECROSIS
Varicose, diabetic and decubitus ulcers.

SURGERY
Inflammation, edema and hematoma.

OBSTETRICS
Episiotomies, phlebitis, postphlebitic edema, postpartum breast engorgement.

Dosage: 0.5 cc to 1.0 cc deeply in the gluteal muscle once or twice daily as indicated.

Supplied: In 1 cc ampuls and 5 cc vials, each cc containing 5000 units of proteolytic activity in an aqueous solution containing 50 mg gelatin, 0.1 mg propyl parahydroxybenzoate, 0.9 mg methyl parahydroxybenzoate.

THE WARREN-TEED PRODUCTS COMPANY
COLUMBUS 15, OHIO

Dallas Chattanooga Los Angeles Portland

WARREN-TEED PHARMACEUTICALS

CYCLEX®

HYDRODIURIL® WITH MEPROBAMATE
HYDROCHLOROTHIAZIDE

to relieve the symptoms of premenstrual tension

for EDEMA... CYCLEX provides the prompt diuresis of HYDRODIURIL for rapid reduction of weight gain, breast fullness, abdominal congestion

for MOOD-CHANGES... CYCLEX supplies the effective relief of meprobamate for nervousness, irritability, tension, nausea, malaise, insomnia

for GI DISTRESS... CYCLEX affords quick-acting relief of nausea and bloating associated with premenstrual tension

SUPPLIED: Tablets, bottles of 100. Each tablet contains 25 mg. of HYDRODIURIL (hydrochlorothiazide) and 200 mg. of meprobamate.

DOSAGE: Usual adult dosage is one tablet once or twice a day, beginning on the first morning of symptoms and continuing until the onset of menses. CYCLEX may be continued through the menstrual period.

Before prescribing or administering CYCLEX, the physician should consult detailed information on use accompanying package or available on request.

CYCLEX and HYDRODIURIL are trademarks of Merck & Co., Inc.

MSD

MERCK SHARP & DOHME
Division of Merck & Co., Inc.
West Point, Pa.

anticholinergic

KEEPS THE STOMACH FREE OF PAIN

tranquilizer

KEEPS THE MIND OFF THE STOMACH

Milpath acts quickly to suppress pain and spasm, and to allay anxiety and tension with minimal side effects.

AVAILABLE IN TWO POTENCIES:

Milpath-400 — Yellow, scored tablets of 400 mg. Miltown (meprobamate) and 25 mg. tridihexethyl chloride. Bottle of 50.

Dosage: 1 tablet t.i.d. at mealtime and 2 at bedtime.

Milpath-200 — Yellow, coated tablets of 200 mg. Miltown (meprobamate) and 25 mg. tridihexethyl chloride. Bottle of 50.

Dosage: 1 or 2 tablets t.i.d. at mealtime and 2 at bedtime.

Milpath®

®Miltown + *anticholinergic*

WALLACE LABORATORIES *Cranbury, N. J.*

the gentlest doctors in town

stop pain with Nupercainal®
(dibucaine CIBA)

...For minor cuts and burns, sunburn, hemorrhoids, removing sutures, performing routine office surgery, making instrument examinations. And, to best suit every situation, there's a choice of Ointment, Cream, Lotion, Suppositories. Complete information sent on request.

CIBA
SUMMIT, N. J.

stop hemorrhoid pain with
NUPERCAINAL SUPPOSITORIES
exact dosage • fast acting

HYPAROTIN™

mumps immune globulin

derived from human venous blood

Hyparotin provides prophylaxis against mumps and its complications. Superconcentration permits low dosage volume and minimizes the risk of tissue distention. The mumps antibody content (165 mg. gamma globulin per cc.) is eight times that of the usual immune serum globulin and twenty times that of human mumps immune serum.

Dosage: For mumps prevention in children the minimum suggested dosage is 1½ cc. This dosage is doubled or tripled for children over twelve and adults, depending on weight and delay since exposure. To prevent orchitis in men with clinical symptoms of mumps, administration of five or more times the minimum prophylactic dose as soon after onset of mumps symptoms as possible may provide protection. Transmission of homologous serum jaundice or any serious reaction has not been reported.

For further information see PDR page 664, **Ask Your Cutter Man** *or write to Dept.* **1-9A**

CUTTER LABORATORIES
Berkeley, California

Leaders in Human Blood Fractions Research

Experiences in the management of coronary disease

WILLIAM F. DAIBER, D.O., F.A.C.O.I., Philadelphia, Pennsylvania*

It is with humility and a deep sense of reverence for the men memorialized by this lecture that I accept this assignment. They were all men of great stature, both in their profession and in their relationships with people. They were dedicated physicians who served the sick, working tirelessly and unselfishly at the art of healing. They gave of their knowledge to younger men, and were in major part responsible for the training of many of us. We revere their memories, we honor their deeds, and we acknowledge their service. We remember their enthusiastic efforts in founding the American College of Osteopathic Internists, and we remember their pride in its growth. We miss their fellowship, but we accept the baton in the unfinished race they ran to conquer disease.

Those of us who have been in practice for the past 30 years have witnessed a dramatic unfolding in the coronary disease story. Centuries ago coronary disease was noted and recognized, but it was much later when correlation of the clinical data was achieved. In the decades before 1920, the pathologist reported to the clinician on occasional autopsy findings of myocardial infarction. These cases had usually not been diagnosed antemortem. I remember, as a high school student in a small town in the early 1920's, hearing of the sudden death of some of the male town dignitaries. Their deaths were attributed to "acute indigestion." Autopsies were not usually performed. The death certificate diagnosis of "acute indigestion" was to continue in use until sufficient correlated clinical and autopsy data justified the diagnosis of myocardial infarction antemortem.

The electrocardiograph, invented by Einthoven in 1903, was used for many years for specific diagnosis of arrhythmias. About 25 years after its invention, the value of the instrument in the diagnosis of coronary disease became apparent. Since then, we have witnessed remarkable developments in the technic of electrocardiography, as well as the newer technics of ballistocardiography and vectorcardiography.

About 25 years ago, Herrick[1] listed some thirty diseases not uncommonly confused with coronary disease clinically. Today, one could list very few diseases presenting a problem in differential diagnosis. This change has been a result of skills developed by physicians in utilizing clinical, electrocardiographic, and laboratory data. Also, many of the diseases listed by Herrick are now uncommon.

Today, then, we find the efficiency of the diagnostic skills excellent, and treatment measures fairly satisfactory, but knowledge of the specific nature of the disease quite inadequate in terms of data leading to its prevention.

However, since coronary disease has been aptly described as being sociobiologic in nature, with known multiple etiologic factors, we may not expect data regarding specific biochemical or physicobiochemical factors to be the only major aids in prevention. Personality traits, life habits, social and spiritual philosophy, and many environmental factors are known to be involved in the development of coronary disease. The main factors known to be dominant in the development of coronary disease are maleness and so-called vascular vulnerability. The latter might well consist of a certain neuroendocrine pattern that permits of vascular spasm of an abnormal degree and duration, and possibly an inborn error in the metabolism of cholesterol.

In my experience, excessive cigarette smoking

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has been a common denominator in most patients. However, one might well ask, "Is cigarette tobacco the factor, or is it rather the type of personality that is driven to excessive smoking?"

Of the secondary or coexistent diseases that modify the course of coronary disease adversely, I have always been interested in the detection of hypothyroidism, especially the subclinical stage which so often remains undiagnosed. It must be remembered that the symptoms of hypothyroidism may be misleading or masked in many cases because of the varying physiologic status of the other endocrine glands in different patients. I have often wondered whether the adrenal gland compensates by increasing its function in hypothyroidism. Even further, one might postulate that in certain cases the adrenal overcompensates, resulting in the syndrome we know as essential hypertension. Thus, mass detection of subclinical or masked hypothyroidism might well be an important preventive aid in both coronary disease and essential hypertension when corrective treatment is instituted.

Comments on diagnosis

Typical coronary disease pain is so classical that the diagnosis can usually be made before the electrocardiogram is taken. Distress which is retrosternal and referred down both arms is the *sine qua non* of diagnosis. When the distress is precordial and referred to the left arm, especially in women, one must remember that radiation of pain to the arm occurs on an anatomic basis even in the absence of coronary disease, and that emotions and fatigue may result in myocardial protest. When the same type pain occurs on effort in a man past age 35 or 40, and is relieved by rest, one can usually make the diagnosis of angina of effort.

It is surprising how many physicians fail to watch for fever 24 to 72 hours after the onset of chest pain, suggestive of coronary thrombosis. Until electrocardiographic changes are diagnostic, one should make the diagnosis clinically and institute treatment early. The recently popularized enzyme tests are not infallible, and should be used with this realization. They have occasionally been helpful, in my experience.

Although one could often make the diagnosis of myocardial infarction without the electrocardiogram, such documentary evidence is necessary and most valuable, especially serial ECG's. Occasionally, electrocardiographic changes are not conclusive for 3 to 5 days. In such cases, it is well to remember that CR leads are sometimes more informative than V leads, and will at times be diagnostic earlier than V lead changes. Many clinicians, among them Wolferth,[2] routinely use CR leads rather than V leads. In the final analysis, the clinical picture is usually most reliable, while the electrocardiogram provides supplementary evidence that is most necessary for localization of the infarct, possible extent, conduction disorders, and so forth.

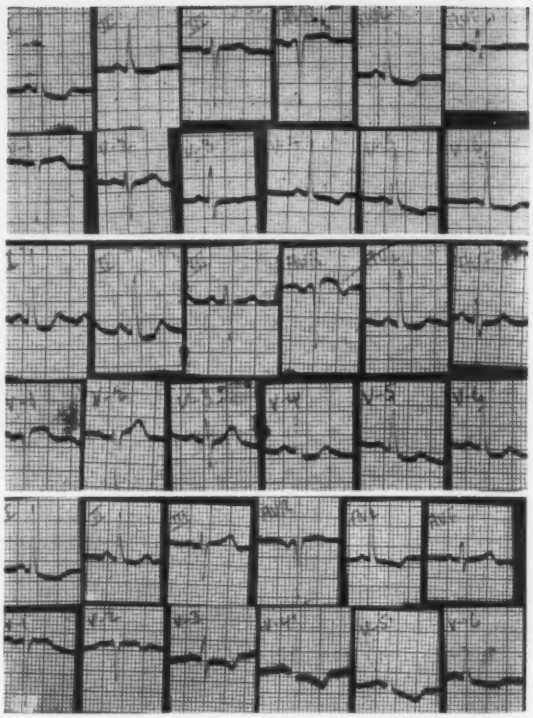


Fig. 1 (top). This is a typical hypertensive ECG, taken July 31, 1959, in a 59-year-old obese woman who had recurrent anginal pain. Fig. 2 (center). An electrocardiogram taken the next day in the same patient, during an attack of angina. T waves are now upright in V_2, V_3, V_4, V_5, and V_6, as well as in leads I, II, aVL, and aVF. Blood pressure at this time was 200/110. Fig. 3 (bottom). Another electrocardiogram of the same patient taken August 2, the day after the attack. At this time the blood pressure was 192/106. T waves are again inverted in most leads.

The relationship between cholecystic disease and coronary manifestations is well known. At times, acute cholecystitis requires differential diagnosis from acute coronary occlusion. Usually the upper right quadrant tenderness or muscle guarding, plus a history of fat intolerance, nausea, vomiting, and upper right quadrant pain, are diagnostic even though S-T segment changes in the electrocardiogram may cloud the issue somewhat. Also, fever and leukocytosis occur much earlier in acute gallbladder disease.

Stress tests • While I recognize the value of stress tests to measure electrocardiographic changes, I have always ordered them sparingly. Occasionally diagnostic data is secured, when one is fortunate enough to have an electrocardiogram taken during chest pain; in fact, this is probably the rule when the pain is other than that due to infarction. Occasionally the electrocardiographic findings are totally surprising; that is, they are normal during the attack and abnormal between attacks.

A 59-year-old woman was hospitalized with hypertensive vascular disease and recurrent anginal pain (Fig. 1). On July 31, 1959, the ECG showed

T-wave inversions. On August 1 at 10 a.m. she had typical anginal pain, and an ECG taken at that time showed considerable improvement, with many of the T waves now upright (Fig. 2). The next day, August 2, a recheck ECG was again abnormal, as was the one taken on July 31 (Fig. 3).

Such unexpected T-wave changes were reported in 1958 by Gardberg and Rosen.[3] This happening was explained as a logical result in certain cases since the current of injury is in an opposite direction to that of the electrical effects of ischemia in the same zone, and the affected zone is usually endocardial. However, when the zone of injury is epicardial, the so-called paradoxical change occurs; there are upright T waves during chest pain and inverted T waves between attacks of pain.

Abnormal S-T elevations of benign significance • In evaluating electrocardiograms, it takes years for the clinician to realize the wide range of normal. Even ECG's which must be classed as abnormal are not necessarily indicative of heart disease.

A routine ECG taken on a healthy 31-year-old Negro showed marked S-T elevations (Fig. 4). He had no history of rheumatic fever or scarlet fever, and was completely negative subjectively and objectively. Such marked S-T elevations in healthy young Negroes are commented upon by Marriott.[4] Our patient's ECG's were checked on three occasions, weeks apart, and findings were always the same. Failure to know that such changes have been proved to be benign could result in a wrong diagnosis and iatrogenic heart disease.

Such persistent S-T elevations have been explained in adults on a basis of childhood acute infection with residual permanent S-T abnormality. This, of course, becomes more apparent when serial ECG's reveal exactly the same S-T elevations.

Experiences in management

Coronary disease in youth • The youngest patient with myocardial infarction coming under my care was a man, aged 27, a fellow in obstetrics in 1941. The onset occurred with ventricular tachycardia, and he was hospitalized the same day. There were no anticoagulants available at that time. There were

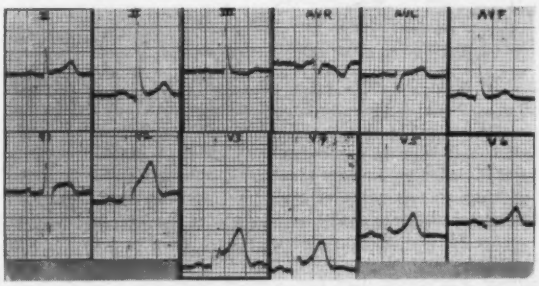


Fig. 4. ECG taken during routine institutional health check on a healthy 31-year-old Negro intern. This abnormal tracing was considered to have no pathologic significance in a healthy young Negro.

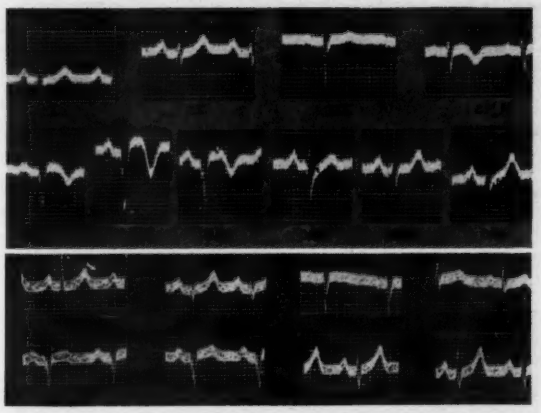
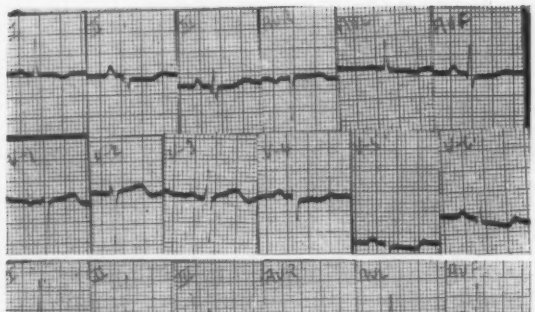


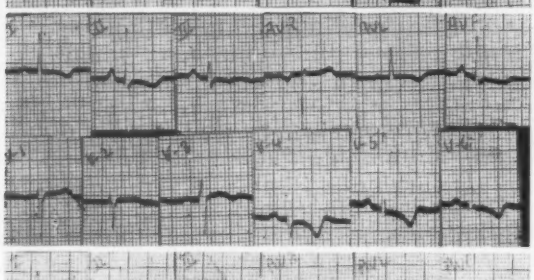
Fig. 5 (top). ECG taken May 25, 1952, during the fourth month of pregnancy in a 37-year-old woman, gravida III para II. She had had four attacks of retrosternal pain in the previous week, all unrelated to effort, and the last attack had been severe, lasting 1 hour. This ECG was considered positive for acute anterior infarction. The patient developed fever and leukocytosis. She was not given heparin, but recovery was uneventful and she was normotensive. She was discharged June 28. Fig. 6 (bottom). In the same patient, an ECG taken on August 1, 1952, during the seventh month of pregnancy. There had been no recurrence of chest pain, and she felt well. An uncomplicated delivery was carried out in October, and she was discharged on the fifth day.

five internists in attendance because of the unusual features of the case and the patient's youth. The ventricular tachycardia was controlled with quinidine, but the patient died suddenly on the fifth day after an attack of dizziness. There were mural thrombi in the left ventricle. The mode of death was judged to be either ventricular fibrillation or cerebral embolism. The autopsy findings revealed miliary tuberculosis which had been totally unsuspected. The patient had been well nourished and apparently well before his coronary attack. Several days before his death, he had had a renal infarction which was recognized clinically and noted again at autopsy.

Very excessive cigarette smoking has been a noteworthy common denominator in most cases of coronary disease occurring in youth.

Coronary thrombosis during pregnancy • This is an extremely uncommon occurrence, but such a patient was admitted to the hospital on May 25, 1952. She had a history of episodes of classical retrosternal pain referred down both arms on four occasions in the previous week, each time while at rest. The patient's mother had had a coronary thrombosis. The patient was a gravida III para II, in her fourth month of pregnancy. The admission ECG was positive for an anterior myocardial infarction (Figs. 5 and 6). Typical fever and leukocytosis occurred. She had an uneventful recovery but was not given heparin. She was discharged 31 days after admission. Her delivery was uneventful, and she was discharged on the fifth day; she was still well at last report.





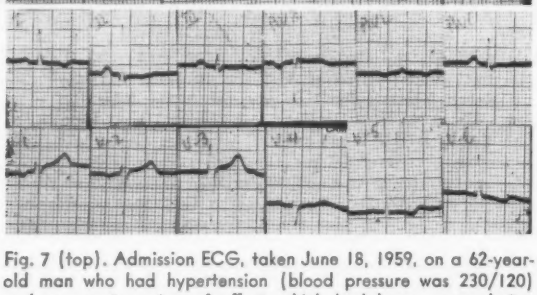


Fig. 7 (top). Admission ECG, taken June 18, 1959, on a 62-year-old man who had hypertension (blood pressure was 230/120) and recurrent angina of effort, which had been worse during the past week. He was given Peritrate, 20 mg. four times daily, reserpine, 0.25 mg. twice a day, Diuril, 0.5 gram twice a day, and Butisol sodium, ½ grain three times daily, and put on modified bed rest. Fig. 8 (center). ECG taken after 3 days of therapy, showing changes for the worse in spite of the fact that there was no recurrence of angina and the blood pressure was now 140/80. Use of Diuril and Butisol sodium were discontinued at this time. Fig. 9 (bottom). ECG taken June 24, showing electrocardiographic improvement. Blood pressure was now 176/88, and there was no chest pain. At this time the patient was receiving only Peritrate and reserpine.

If faced with the same problem again, I would use anticoagulants and discontinue them at a safe time before the expected delivery date.

Overtreatment of hypertensives with coronary disease • It is an axiom in clinical medicine that long-standing hypertensives who become arteriosclerotic become more symptomatic if the blood pressure is abnormally lowered. For instance, the blood urea nitrogen tends to elevate if the blood pressure is markedly reduced as a result of intensive therapy. So, it also seems likely that coronary circulation would be reduced when the blood pressure is markedly lowered. This has been noted clinically when angina becomes more frequent after the blood pressure is markedly lowered. The following case is illustrative of adverse electrocardiographic changes as a result of intensive therapy for hypertension and reduction of the blood pressure to an abnormally low level.

A man, aged 62, was admitted to the hospital with a blood pressure of 230/120 and recurrent angina (Fig. 7). After several days of intensive therapy, his blood pressure was 140/80, but his electrocardiogram was worsened (Fig. 8). Therapy was partially discontinued, and his blood pressure returned to 176/88. At the same time, his electrocardiogram showed improvement (Fig. 9). One must beware of overtreating chronic hypertension.

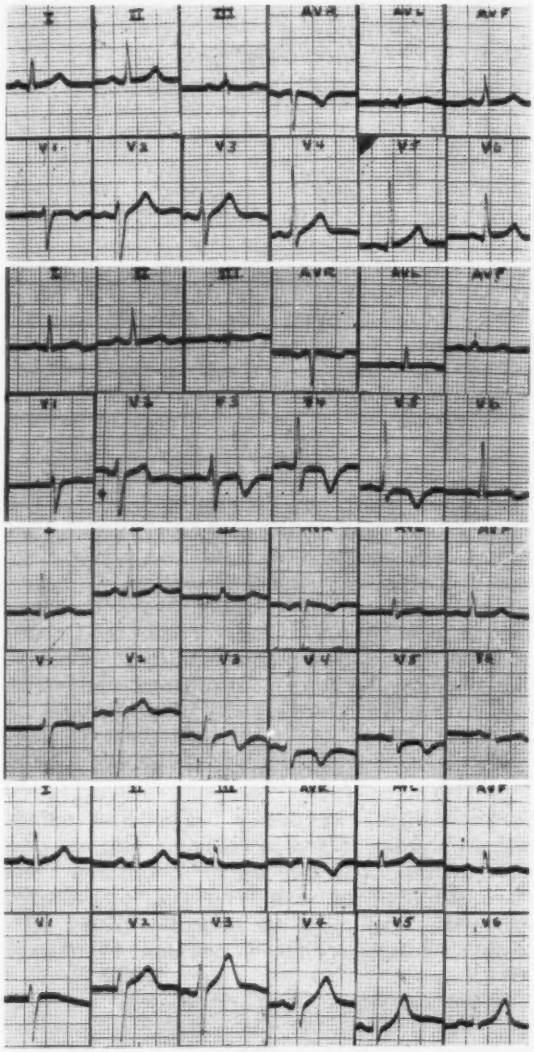


Fig. 10 (top). An ECG taken January 9, 1959, about an hour after a 49-year-old man suffered typical retrosternal distress for the first time. The episode lasted 10 minutes. Bed rest was ordered, and smoking was discontinued. Fig. 11 (center, above). An ECG taken on January 11, showing abnormal patterns. There had been no recurrence of chest pain, nor was there any fever. Bed rest was continued. Fig. 12 (center, below). ECG taken January 13, showing an improved though still abnormal tracing. There had been no recurrence of chest pain, and no fever. The patient was still at bed rest. Fig. 13 (bottom). Normal ECG taken March 5, 1959, on the same patient. He had remained at home for 3 weeks, ambulatory after the first week, and had no recurrence of chest pain. At the time this tracing was made, he felt well.

Electrocardiographic changes after angina • At times, one is surprised at the electrocardiographic changes occurring after a single anginal attack. One night last January, a colleague called me and told me he had just had substernal pain lasting for 10 minutes after going upstairs. I went to his home and found him free of pain with no abnormal physical findings. An hour later, an ECG was taken which was quite normal (Fig. 10). Nevertheless, he was told to rest in bed with bathroom privileges. There was no recurrence of pain. He discontinued smoking (two packs daily). Thirty-six hours later, an electrocardiogram was quite abnormal with inversion of T waves in V_3, V_4, V_5, and partially in V_6 (Fig. 11). There was no fever. Two days later, the T waves were less deeply inverted (Fig. 12), and in less than a week the ECG was normal. However, he was kept at home for 3 weeks. He has never had a recurrence of chest pain, and has now resumed his general practice (Fig. 13). He now limits his cigarettes to 10 to 15 daily. Too often, such a single incident of chest distress is summarily dismissed by the family physician as "gas pressure" or something similar. This patient has been regarded as having chronic coronary disease in terms of advice regarding living habits and periodic rechecks.

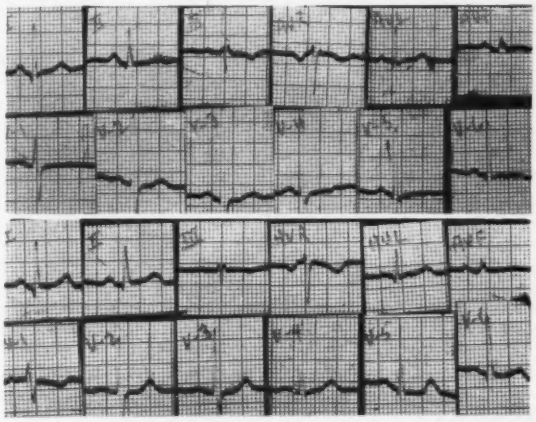


Fig. 14 (top). Admission ECG, taken April 27, 1959, showing abnormal findings in a 64-year-old woman who had had angina of effort since 1953. Chest pain and breathlessness had been worse since an auto accident in June 1958, so that she now had nocturnal dyspnea to the point of remaining propped up in bed all night. The heart rate was 76, and the blood pressure was 130/90; there was neither edema nor lung rales. She was found to have hiatus hernia, and surgical correction by the transthoracic route was carried out on April 29. Fig. 15 (bottom). ECG taken 1 week postoperatively, on May 6, showing normal findings. The patient was discharged on May 10, improved.

Hiatus hernia and coronary disease • Occasionally one encounters patients with both esophageal hiatus hernia and coronary disease. At times it is difficult to judge the origin of symptoms such as chest pain and breathlessness. Most of these patients tolerate surgical correction well.

Such a patient was a 64-year-old woman who had had typical angina of effort for 5 years prior to an auto accident in June 1958. After this, her chest pain and breathlessness worsened. A hiatus hernia was discovered. On admission to the hospital, she gave a history of having had nocturnal dyspnea for months, and having to sleep propped up high in bed. Her blood pressure was 130/90 and heart rate was 76; there were no murmurs, lung rales, or edema. Her admission ECG was abnormal (Fig. 14). One taken 7 days after operation was normal (Fig. 15), and she was discharged 12 days postoperatively feeling improved.

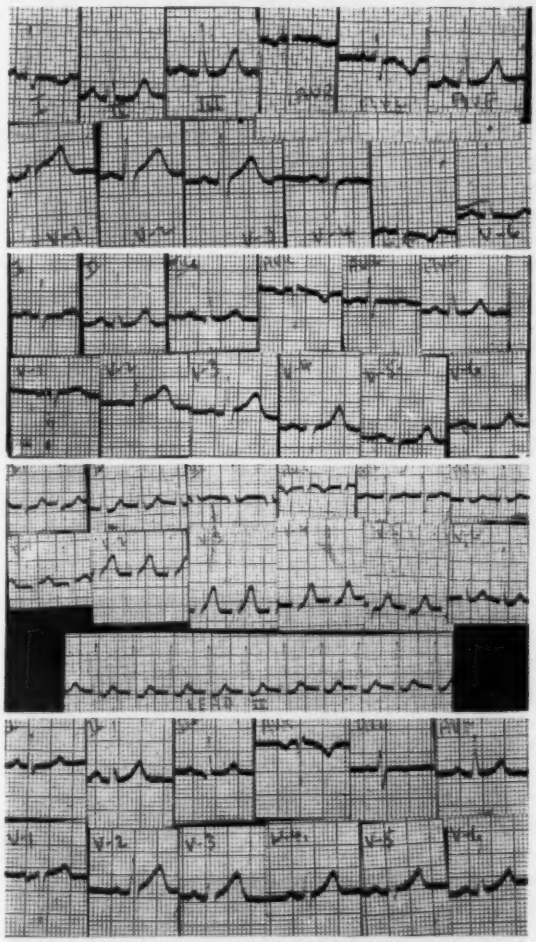


Fig. 16 (top). Abnormal ECG, taken July 13, 1957, in a normotensive man who had suffered retrosternal pain on several occasions. Fig. 17 (center, above). ECG taken on July 7, 1959, when this 53-year-old man was admitted to the hospital with thrombophlebitis. He had no chest pain, and ECG findings were considered normal. Fig. 18 (center, below). ECG taken 2 weeks later, on July 21, when the same man was readmitted with paroxysmal supraventricular tachycardia (rate was 160 per minute). T waves had good amplitude. The patient complained of weakness, but had no chest pain. The attack began at 7:00 a.m. and terminated at noon. Fig. 19 (bottom). ECG taken the same day, 4 hours after termination of attack of paroxysmal tachycardia. The ECG was normal, showing no post-tachycardia T-wave flattening or inversion.

Patients with symptoms attributable to hiatus hernia should have operative treatment regardless of the size of the hernia. In all of our patients, operation is by the transthoracic route, and they tolerate the procedure well.

Paroxysmal tachycardia and chronic coronary disease • While patients with chronic coronary disease are likely to tolerate paroxysmal tachycardia poorly both subjectively and objectively, the reverse is true in some patients. Even post-tachycardia T-wave inversion is not the rule.

A 53-year-old man had retrosternal pain of 1 hour's duration in June 1957. His ECG was abnormal (Fig. 16). Two years later, he was admitted to the hospital with thrombophlebitis, and his ECG was entirely normal (Fig. 17). Two weeks later, he was readmitted wth a paroxysmal supraventricular tachycardia (pulse rate, 160) of 5 hours' duration (Fig. 18). When first examined, his blood pressure could not be recorded, and he was perspiring profusely. He was given intravenous glucose, sedation, and potassium orally, and the attack terminated shortly after admission. A recheck ECG 4 hours later was normal, with no post-tachycardia T-wave flattening or inversion (Fig. 19).

A woman, aged 51, was admitted on June 12, 1951, with paroxysmal supraventricular tachycardia (pulse rate, 190) of 3 days' duration (Fig. 20). There was no heart failure. The attack was terminated by the use of intravenous calcium gluconate, sedation, and quinidine orally about 3 hours after admission. Four days later, post-tachycardia T-wave inversion was still present (Fig. 21). Such T-wave inversions have been known to persist for weeks after the attack.

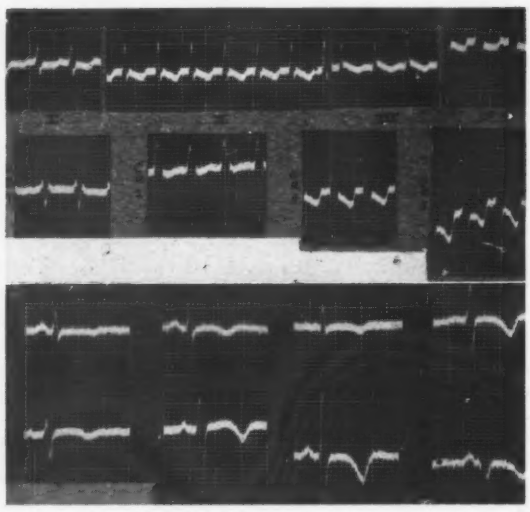


Fig. 20 (top). ECG taken June 12, 1951, in a 51-year-old woman who had had paroxysmal tachycardia for 3 days at home. The attack was terminated with intravenous calcium gluconate and oral quinidine. She had had chest pain at the onset of the attack. Fig. 21 (bottom). ECG taken 4 days after cessation of 3-day paroxysmal tachycardia attack, showing post-tachycardia T-wave inversions.

Treatment should be fairly aggressive for the paroxysmal tachycardia attack in the patient with coronary disease. I prefer intravenous glucose, sedation, potassium, and quinidine orally in 6-grain hourly doses. I have no major objection to the use of intravenous Cedilanid once the possibility of ventricular tachycardia is ruled out, and if one is certain that a major potassium depletion is not present.

Superimposed cardiac neurosis • This is one of the most difficult neuroses to dislodge from a patient's psyche, especially when it is superimposed on underlying coronary disease. Many times the symptoms are entirely of nonorganic origin; at other times the symptoms are of mixed origin. Following is a comment on one of the more intractable cases of this type.

A man, aged 39, had an acute myocardial infarction on December 25, 1956. The ECG changes were diagnostic the same day. The patient refused to accept the diagnosis and remained home but completely ambulatory for the next 5 days. He then submitted to bed rest because of fatigue (Fig. 22). He has had a severe cardiac neurosis ever since. He has a rather constant awareness of his anterior chest and constant fear. He seldom has typical anginal pain, and then not severely. He has been to two psychiatrists and has had hypnosis with no improvement.

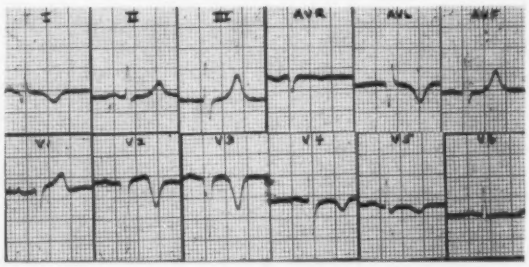


Fig. 22. An ECG taken February 8, 1957, in a 39-year-old man who had had an acute anterolateral myocardial infarction on December 25, 1956. The ECG had been diagnostic the same day. The patient refused to accept the diagnosis and remained completely ambulatory for the next 5 days before he finally submitted to bed rest. He has had a severe cardiac neurosis ever since. He was normotensive, and smoked two to three packs of cigarettes daily.

His father had died suddenly at age 42 on the day of his (the father's) daughter's wedding. This past June, our patient faced a similar situation; he was 42, and his daughter's wedding date was set. For 6 weeks before the wedding, the entire household was constantly upset because of the patient's apprehension and irritability. Needless to say, he survived the wedding day.

One day I said to this patient, "Why don't you resign yourself to dying, since you are so constantly tormented?" His answer: "I have often thought of that, but I'm afraid of the hereafter."

However, most cases are not this impossible of improvement. Much treatment of this type would be unnecessary if the iatrogenic component were removed earlier.

Angina with "choking sensation" (superimposed neurosis) • The advice to use nitroglycerin unsparingly and early at the slightest sign of chest distress is usually good.

A policeman, aged 44, had recurrent angina of effort, but also had frequent "choking sensations" or tightness in his throat regardless of effort (Fig. 23). He developed the habit of using nitroglycerin for the tightness in his throat regardless of effort; as a result, he used 150 to 250 tablets weekly. He once used 100 tablets in 2 days. He had esophagoscopy against my better judgment, but with no ill effects and without positive findings. Roentgenograms were negative. He was examined by a psychiatrist who reported a major anxiety factor. When he returned to work as a policeman, he was placed on active duty. Shortly thereafter, he suddenly died while arresting a youth in an altercation in a diner.

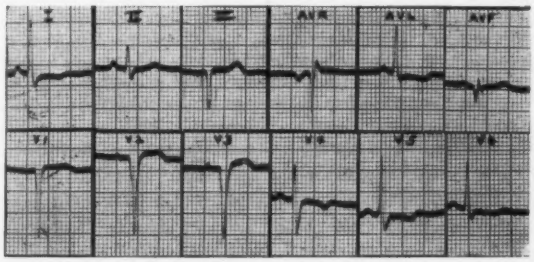


Fig. 23. An ECG taken September 9, 1955, in a 44-year-old man who had had a coronary thrombosis in 1951. He had a chronic "choking" sensation and anterior chest distress at times, and for relief of this he took 150 to 250 nitroglycerine tablets weekly. His blood pressure was 120/90. He was returned to active duty as a policeman, and he died suddenly while making an arrest several months later. This man had smoked two packs of cigarettes daily.

There is no doubt that his angina was not nearly as frequent as he thought. However, an error in rehabilitation was made. He should have been assigned to desk duty.

Electrocardiographic improvement with sudden death • Serial ECG's obtained during actual or threatened myocardial infarction are always helpful. Sometimes they are falsely encouraging, as might be expected.

A 50-year-old man was admitted on January 10, 1959, at 12:30 a.m., with a history of recurrent retrosternal pain for the past week lasting 30 to 60 minutes each time. He had been awakened from sleep on four occasions with such distress. The pain radiated to both arms. His blood pressure was 118/80. The admission electrocardiogram was abnormal (Fig. 24). He was given Demerol and had a good night. At 10:00 a.m., a recheck ECG was

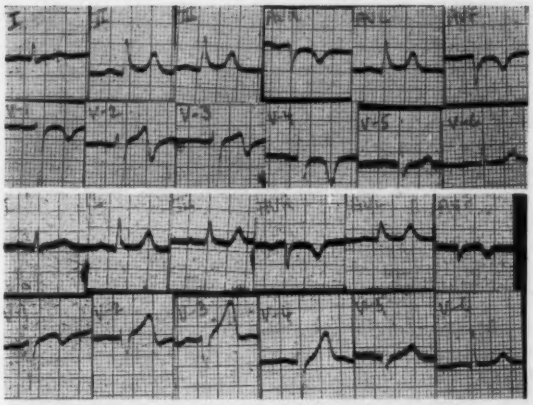


Fig. 24 (top). Abnormal ECG taken at 12:30 a.m. on January 10, 1959, in a man who had had recurrent retrosternal pain four times during the previous week. On these occasions he had been awakened from sleep with pain which radiated to both arms and lasted 30 to 60 minutes. His blood pressure was 118/80, and serum transaminase was 23. Fig. 25 (bottom). Improved ECG taken at 10:30 the same morning. T waves in V_2, V_3, V_4, V_5, and V_6 were now upright, and there had been no recurrence of chest pain. The patient died suddenly at 3:30 that afternoon.

markedly improved. (Fig. 25), and he had no recurrence of pain. He died suddenly at 3:30 p.m. the same day. An autopsy revealed occlusion of the anterior descending branch of the left coronary just distal to the bifurcation of the left coronary into the circumflex and anterior descending branch. Anticoagulants had not been given.

One should not have a false sense of security when electrocardiographic changes are temporarily improved, in view of recurrent classical chest pain. Anticoagulants should be used in threatened infarction.

Conversion of auricular fibrillation • The technic of conversion of auricular fibrillation to normal sinus rhythm with quinidine in gradually increased doses in a heparinized patient still has some advocates. This is not without considerable danger of embolism, and I have discarded the technic. One of the first of my patients to have this treatment was a man, aged 49, with coronary disease and auricular fibrillation. He had been known to have had fibrillation for at least the previous 2 years. His rhythm was converted on October 2, 1944 (Fig. 26) and he was sent home several days later. The first day he was at home, he developed a splenic infarct, and 2 days later a cerebral embolism with marked dysarthria. He had been the editor of a town newspaper. He was never rehabilitated and lived for some years, though very unhappily because of his partial aphasia and dysarthria.

I prefer control of the rate of fibrillation with digitalis and anticoagulants on an ambulatory basis rather than dramatic attempts at conversion.

Peripheral arterial embolism • Probably no complication of acute myocardial infarction is more

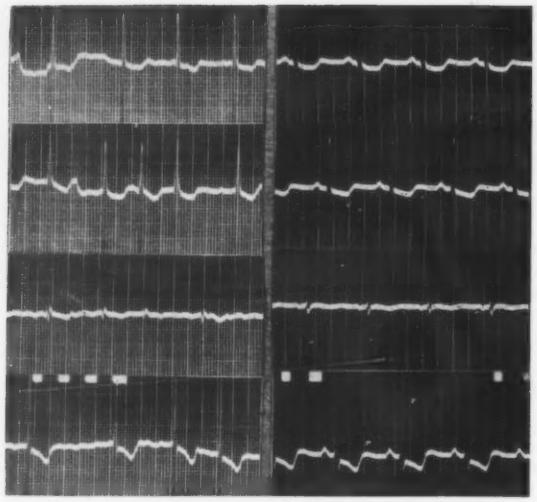


Fig. 26. ECG taken after rhythm had been converted in a 49-year-old man who had had coronary disease and auricular fibrillation for at least 2 years. The first day he was home from the hospital he developed a splenic infarct, and 2 days later had a cerebral embolism with marked dysarthria. He was never completely rehabilitated.

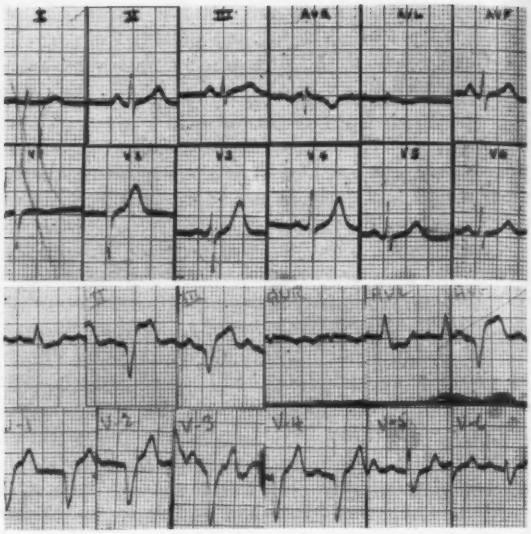


Fig. 27 (top). ECG taken November 27, 1957, in a 53-year-old man who developed retrosternal pain at work in the morning. This tracing, taken in the plant infirmary, was considered normal, although the aVL lead was somewhat suspicious. The patient was normotensive. Pain recurred at 7:30 that evening, and the patient was admitted to the hospital at midnight. The admission ECG was essentially the same as this one. Fig. 28 (bottom). This ECG was taken on December 11, 9 days after admission. The patient had had daily recurrence of chest pain during the first week, and had been given heparin. The ECG was not diagnostic until the fifth day, although the clinical diagnosis was apparent after 36 hours. On December 7 a saddle embolus had developed, with purplish lividity of both lower extremities, and on December 11, the day this ECG was taken, the patient died.

horrifying than the sudden occurrence of peripheral arterial embolism. This is most common in the vessels of the lower extremities, and it usually adversely affects the clinical course from then on. Unfortunately, anticoagulants do not guarantee against the occurrence of this complication. However, if one examines such records, the dosage of anticoagulants will usually be found to have been inadequate.

As soon as such a complication occurs, the hospital personnel attending the patient divide into two groups therapeutically: one group is for immediate embolectomy, and the other for conservative measures. Both opinions have good bases; however, when one studies the problem and reviews cases, the following facts are significant:

1. Embolectomy is a major procedure during convalescence from myocardial infarction.

2. There is a fair chance that the operation will not be successful, both in terms of adequate aspiration of clots and level of incision.

3. The operation is aimed only at the present occlusion, and the threat of recurrent embolism is still great.

Conservative treatment at times is effective, especially if caudal analgesia is used continuously and the anticoagulants are continued with the dosage increased. Embolectomy is less successful when the occlusion is below the knee. Having observed both forms of therapy in a fair number of cases, I have no enthusiasm for either type, but I usually try to avoid embolectomy.

A man, aged 53, had retrosternal pain while at work on November 27, 1957. An ECG taken at the plant infirmary was negative (Fig. 27). He was sent home. At 7:30 p.m. the pain recurred, and he was admitted to the hospital at midnight. The ECG was not diagnostic until the fifth day (Fig. 28), but the diagnosis was apparent clinically after 36 hours. The patient was heparinized. He had daily recurrences of chest pain. Nine days after admission, he developed a saddle embolus with purplish lividity of both lower extremities. The patient died several days later, having been under continuous spinal anesthesia.

At autopsy, there was occlusion of the right coronary and a pale embolus at the bifurcation of the aorta, propagating down both iliacs and proximally to the renal arteries. There was bilateral occlusion of the renal arteries. The patient had suffered renal shutdown 2 days before death. A transverse myelitis was also found.

In another case, a 62-year-old man, a D.O., had his first retrosternal pain within a week prior to his admission on July 5, 1959. An anteroseptal infarct was apparent in the ECG (Fig. 29), and the patient was immediately heparinized. His cooperation was poor for the next 10 days. He was out of bed daily, walking the halls, and in general defied orders. On the eleventh day, he developed an embolus in the left femoral at 7:00 a.m. After a trial of caudal analgesia, a successful embolectomy was performed at 9:30 p.m. However, he later developed another embolus in the left popliteal, and died suddenly in bed 10 days after the opera-

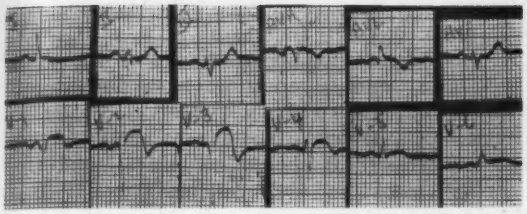


Fig. 29. ECG taken July 5, 1959, in a 62-year-old man, showing an anteroseptal infarct. The first attack of retrosternal pain had occurred within the past week. The patient was given heparin. On the eleventh day at 7:00 a.m. he suddenly developed an embolus in the left femoral. A successful embolectomy was performed at 9:30 p.m. after a trial of caudal analgesia. The patient died suddenly 10 days later of a second infarction.

tion. At autopsy, an extensive infarction was found involving the septum.

Case of myocardial infarction • A man, aged 54, a bus driver, was admitted on September 29, 1953, with retrosternal pain referred to the left arm. The ECG revealed an anterolateral infarction. His blood pressure was 180/120. About 5 days later, he went into left ventricular failure which was controlled, and 3 days later he developed shock. Treatment was of no avail, and the patient died on October 10. An autopsy revealed coronary occlusion with anterior infarction. It was noted that this patient had smoked two packs of cigarettes daily.

Myocardial infarction with rupture • A 54-year-old man was admitted with restrosternal pain on October 3, 1955. The ECG was positive for myocardial infarction (Fig. 30). The patient became irrational and required almost constant sedation for 5 days. On October 10 he suddenly went into shock and died. He had been receiving anticoagulants and a vasopressor. Autopsy revealed a soft necrotic area in the posterior wall of the left ventricle, 5.0 cm. in diameter. There was a defect 2.0 cm. in diameter, which opened into the left ventricle. There was occlusion of the right coronary and thrombi were found in the great vessels.

Perforation was not related to the abnormal blood pressure elevation with medication, but to the transmural nature of the defect plus necrosis.

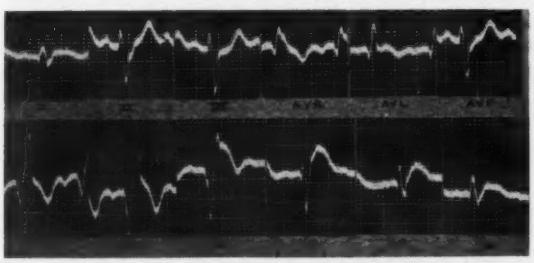


Fig. 30. An ECG taken September 20, 1955, in a 54-year-old man. The day before he had had an anterolateral myocardial infarction complicated by left ventricular failure and, later, shock. Admission blood pressure was 180/120. The patient died on November 10.

Ventricular aneurysm • This sequela of myocardial infarction, although uncommon, should be considered when repeated pulmonary edema occurs after recovery from acute myocardial infarction, and when S-T depressions of significant degree become chronic, especially in the precordial leads over the left ventricle.

I can recall only two such cases. One was a man, aged 58, who had a myocardial infarction in 1944. He had repeated pulmonary edema after this and was in critical condition several times. Roentgenograms were taken to rule in or out the possibility of ventricular aneurysm; it proved to be present (Fig. 31). This man died in less than a year.

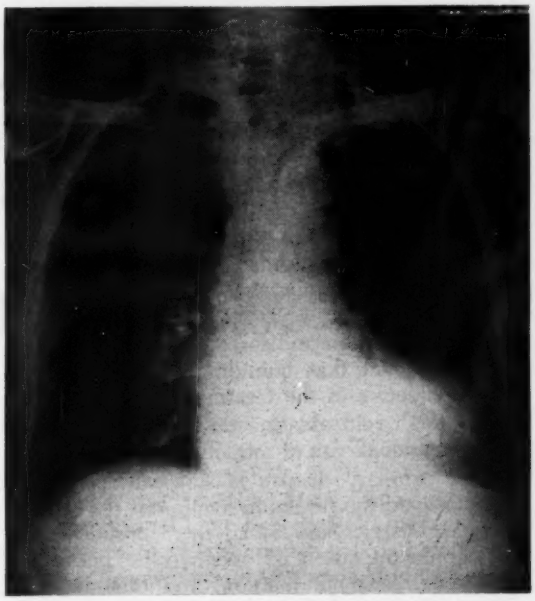


Fig. 31. Roentgenogram of the chest, showing ventricular aneurysm. This 58-year-old man had had a myocardial infarction sometime before and had been in critical condition with pulmonary edema several times. He lived less than a year after this x-ray was taken.

Prognosis

Whenever justified, optimism should be a major part of the statement of prognosis. Unusual achievements are very possible in patients with coronary disease. A fair number of patients have angina which assumes a benign clinical pattern. They can and do live normal lives, some for 20 years or more and a great many for 10 to 20 years. I just discharged a 62-year-old man from the hospital after his second myocardial infarction. He had his first infarction in 1950. In 1954 he had a lobectomy for bronchogenic carcinoma. He now looks and feels well. He insists that he will return to work 6 weeks after the onset of his recent infarction; he may be right, although I have advised that he take 10 to 12 weeks of total abstinence from work.

An accurate prognosis is always based on a total evaluation of the patient, and optimism should be

the keynote in the degree it is indicated plus some to allow for error in judgment.

Treatment

Without attempting to fully discuss treatment, certain observations can be made. Physician attitude during the patient visit is extremely important. The physician must always leave "something of himself" with the patient, but what he leaves must be reassurance, optimism, and satisfaction. Any "don'ts" regarding activity, diet, and so forth, should always be diluted with twice as many "do's," so that the sum total of the patient visit is not pessimism.

Medication • Vasodilator drugs are definitely more effective in prevention of angina than they were 10 or more years ago. Too few patients receive instruction regarding the judicious use of nitroglycerin in prevention of an anticipated attack of angina before certain efforts. Patients who may have difficulty securing medical care for relief of prolonged chest pain should have on hand at all times several morphine tablets (¼ grain). Should pain be prolonged and nitroglycerin be ineffective, a morphine tablet under the tongue, and repeated if necessary, should give relief and may prevent prolonged occlusion and infarction. It seems to be a forgotten fact that quinidine sulphate is occasionally effective in the treatment of angina.

Isotopic thyroid ablation deserves consideration in the occasional case of intractable angina. Operation for coronary disease is still experimental. I have observed the results in ligation of the internal mammary arteries and found them unsatisfactory. The simple operation of opening the pericardial sac through a small incision, and then injecting asbestos dust in the pericardial sac to granulate and vascularize the surfaces, has sometimes been very effective. This procedure appeals to me more than any other presently devised technic.

Manipulative therapy • This may some day be proved to be the most valuable preventive aid in coronary disease candidates. However, it will take a long-term project with controls who do not receive such therapy to document the evidence we all predict would eventuate. In the interim, every patient with coronary arteriosclerosis should receive osteopathic manipulation for its therapeutic effect.

Anticoagulants • There is no doubt that anticoagulants have proved their worth. I use them routinely in acute infarction, unless there is a real contraindication such as a blood dyscrasia, positive knowledge of a recent ulcer, definite liver disease, or recent operation on the central nervous system. For me, heparin has been the drug of choice, with changeover to Dicumarol after 2 to 3 weeks. Dicumarol is continued after discharge. Serious hemorrhage has not been encountered while heparin was in use, but severe hypoprothrombinemia with bleeding has been seen, especially in outpatients who were receiving Dicumarol.

Occasionally during heparin therapy, I have noted daily fever which disappeared when the heparin was discontinued. The sedimentation rate is, of course, not reliable during heparin administration, being increased. It should be remembered that estrogens block the effect of heparin, and the two should not be given concurrently. My greatest fault has been timidity regarding doses of heparin as large as 400 mg. or more daily. In retrospect, I think that such doses are safe and indicated to secure a Lee-White coagulation time of 20 to 25 minutes.

Physical activity • In chronic coronary insufficiency, the rule of limiting activity below the level of production of chest pain is practical. In addition, strenuous effort should be prohibited. In acute infarction, bed rest for 3 weeks is recommended, using a commode at the bedside after the first or second day, and allowing the patient any position in bed. After discharge, gradual resumption of normal activity is suggested, unless heart failure or severe coronary insufficiency persists.

Diet • Obesity affects coronary disease adversely. It should be corrected, though not too aggressively in patients past 40 to 50 years of age. Sudden and marked changes in body metabolism may precipate a coronary attack. Such marked decreases of available glycogen for myocardial function are somewhat comparable to the danger one anticipates in a coronary patient with diabetes who suffers sudden marked lowering of blood sugar as a result of insulin overdosage.

Hormones • Use of estrogens in the male is still in the experimental stage. This treatment seems to be used less now than it was several years ago. In hysterectomized females and even those with masculine qualities or a history of many pregnancies with consequent premature ovarian atrophy, estrogens are indicated on a long-term basis as a preventive measure for coronary disease.

Summary

The problem of degenerative vascular disease ranks with the problem of cancer in national significance and importance. The available knowledge of the nature of this disease has not been adequately utilized. This is in part due to physician failure and in very major part due to patient failure in regard to cooperation in therapy advised. Education of both the physician and the public would do much to improve the situation. The real solution may emerge from the vast research efforts that constantly add to our knowledge. However, there is also a very strong likelihood that the solution may depend upon the following:

1. A drastic change in the eating habits of the American public to diets of lower calories and better balance, low in animal fat.

2. Increased physical activity with regular exercise as a life-long habit.

3. The regular use of manipulative therapy, for an indefinite period in patients who are considered candidates for coronary disease by reason of family history, hormonal status, coexistent disease, or other status known to contribute in the development of coronary disease.

4. A re-evaluation of our objectives in life, regarding material acquisitions and the price we pay for them in developing abnormal "inner drive."

5. A searching inquiry of our philosophy of life and a consideration of developing an attitude of acceptance instead of chronic protest.

6. The acquisition of "inner peace" through spiritual thinking, devotion, faith, and prayer.

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Observations based on monitoring the tonic neck reflex and associated reactions in the hemiplegic patient by multichannel electromyography

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Normal posture and voluntary motion involve a complex of dynamic interrelationships mediated through the central nervous system and its peripheral connections. To properly balance this interplay it is required that certain reflex postural and movement patterns be facilitated and that others be inhibited. It is this balance of facilitation and inhibition, especially of primitive patterns, that may be critically disturbed by an insult to the central nervous system, such as is represented by hemiplegia.

Tonic reflexes (static postural reflexes) produce sustained changes in the tone of muscles, especially antigravity muscles. The tonic neck reflex (TNR) changes the distribution of muscle tone throughout the body in response to proprioceptive stimuli originating in the neck muscles and joints. There is an increased extensor responsiveness in the arm and leg of the side to which the face turns, and increased flexor tone of the side to which the occiput points.[1]

This study was carried out during the third year of Dr. Simon's Fellowship Training in Physical Medicine and Rehabilitation at the Graduate School of the College of Osteopathic Physicians and Surgeons, Los Angeles, under the Mead Johnson Graduate Education Program. Dr. Simon is presently head of the Department of Physical Medicine at the Rio Hondo Memorial Hospital, Downey, and the Mont Royal Memorial Hospital, Los Angeles.

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Recurrence or persistence in part or whole of the primitive normal tonic neck reflex[2] of infants often occurs when there is an intracranial pathologic condition which is clinically upper motor neurone in nature. Recognition of this may be useful in retraining such a patient.

These changes in tone may be sufficient to cause an actual limb movement, but where the spasticity is slight may be clinically detected by testing the resistance to passive flexion or extension of the limb.[3]

Failure to recognize a TNR may lead to such difficulties as inability to extend an elbow or knee buckling on turning the head to a certain side, or to futile attempts to change a head position that is functionally useful to the patient. The cerebral palsy patient with an uninhibited TNR may be able to maintain sitting balance only for very brief periods. Any head turning, even the head motion related to speech, may produce redistribution of tone and loss of balance. Turner, Perlstein, and Elam[4] have reported that testing of the TNR in cerebral palsy patients surprisingly did not always follow the expected classical pattern, that is, flexion of limbs on the occipital side and extension of those on the chin side of the head, response being recorded as increased muscle action potential discharge in the limb muscles. A positive response of increased electromyographic (EMG) activity on

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passive head rotation was obtained in 13 of 19 subjects, but in 8 there was no relation between EMG activity in flexors or extensors and the side to which the head was turned. The lateralization of the flexor-extensor response was the same regardless of whether the head was rotated to the right or to the left; that is, the EMG activity was in most cases independent of the direction to which the head was turned. Fay[5,6] has suggested that the proper way to elicit and therapeutically utilize the TNR is in the prone position. This is in keeping with the view that these reflexes are part of a primitive crawling mechanism, and that the proper way to crawl is in the prone position. Bobath,[3] on the other hand, states that the asymmetrical tonic neck reflexes are strongest in the supine position (or sitting with the head thrown back), weakest in the sitting position, and most pronounced on rotation to the right.

It is thought that voluntary muscular activity by the patient with intracerebral upper motor neurone disorder will produce certain associated motions or changes in tonus in the voluntary muscles of involved areas. Simons[7] has reported on a hemiplegic in whom the associated motions of the affected leg, following strong voluntary contraction of the unaffected side, were the same regardless of which way the head was turned; whereas in the upper extremity the position of the head determined the pattern of the associated motion of the involved side.

Since these neck reflexes are more likely to manifest themselves as tonus changes than as movements,[8] the purpose of this investigation was to study EMG correlates of the TNR in the hemiparetic upper and lower extremity under several test conditions; that is, in the prone as compared with the supine position, and as facilitated or inhibited by strong volitional effort (gripping) in the good hand.[8] This latter phenomenon is familiar to physicians as reinforcement and elicits associated movement or associated reaction. In reinforcement, strong effort in one limb increases the reflex sensitivity in other limbs.[7,8] "By associated movement is meant that with volitional efforts directed specifically to activate one muscle group, other muscle groups also become activated; and that the person in question is not able to prevent, volitionally, the unwanted activation."[8] It is a postural or tonic reflex arising in the muscles of another limb.[3] These may be very distinct phenomena in the hemiplegic patient.

Further, this gripping maneuver was included in our observations because Simons[7] noted that a change in the position of the head alone did not always cause a change in tone in the spastic-paretic limbs, but if an associated motion was brought about by a strong voluntary contraction in one of the unaffected limbs, the motion of the affected limb followed the pattern which the turning of the head alone should have elicited. The position of the head determined the pattern of the associated motions.

Method

All electromyographic recordings were made with an 8-channel ink-writing Grass, Model III D, with the muscle filter turned off. Paper speed was 30 mm. per second. Specially designed bipolar surface electrodes were used. They consisted of thin silver disks 0.6 cm. in diameter and mounted as pairs 2 cm. apart in plastic. The skin was carefully cleansed with acetone, electrode jelly was rubbed into the skin, and then the surface electrode was strapped into place. The long axis of the electrode was placed parallel to the fibers of the muscle under examination.

The area for surface electrode placement was chosen by locating that area closest to the conventional motor point which responded to the least low voltage electrical stimulation by the unipolar method of sine wave stimulation. Electrodes were placed on the hemiparetic side over the anterior tibialis, gastrocnemius, upper medial hamstring, distal quadriceps, biceps, triceps, wrist flexors, and wrist extensors. All muscles were simultaneously recorded.

The patient was first placed in the supine position, limbs in relaxed extension on the examining table, arms at the side of the trunk. Sixteen standardized procedures followed, each repeated at least once. Each procedure was sustained for a duration sufficient to eliminate a latency of response factor.

1. *Passive head turning.* The subject's head was passively rotated through its full easy range of motion toward the involved side.

2. *Fist clenching.* As above, but with simultaneous fist clenching by the good hand.

3. *Resisted active head turning.* The subject actively rotated his head toward the involved side through its full range of motion. At the end of this range he isometrically actively resisted a strong effort by the examiner to rotate the head back to the neutral position.

4. *Fist clenching.* As above, but with simultaneous fist clenching by the good hand.

5.-8. The procedures were the same as 1 through 4, but the head was rotated toward the good side.

9.-16. These procedures were the same as 1 through 8, but the patient was in the prone position. A pillow was placed under the chest to permit a neutral anteroposterior position of the neck and unrestricted rotation.

Resting periods were permitted between the various steps. Each patient was subjected to a single test lasting approximately 2 hours. The test-retest index of reliability of the reproducibility of the EMG records was not determined; neither was the effect of different starting positions for the limbs noted.

Subjects

Nine ambulatory hemiplegic outpatients served as subjects. All were diagnosed as having had a cerebral infarction secondary to thrombosis except for one who had a traumatic subdural hematoma and one who had a cerebral embolus following mitral commissurotomy. There were seven men and two women, and five right-sided and four left-sider hemiplegias. Onset of their disorders was, respectively, 3, 6, 9, 15, 20, 21, and 24 months and 5 years earlier. The TNR was elicited in all patients except the one whose onset was 20 months earlier. His clinical picture was without spasticity, being one of a central sensory defect producing weak, incoordinate movement. Another record, that of the patient 21 months post-onset, was felt for technical reasons not to be satisfactory for inclusion in this study. A complete testing of two normal control subjects showed no TNR responses.

Observations

The following observations were made during this investigation:

1. The TNR responses were almost invariably *partial* rather than total. For example, the response might consist of discharge only in the quadriceps, triceps, and wrist extensors, or, on repeating the same maneuver, only in the triceps.

2. Great *variability* was noted, whether comparing the record of one subject with that of another or studying the consistency within a single record. In one right-sided hemiplegic, TNR were best provoked in the supine position; in another, in the prone position. Within a given record it seemed that the same procedure might once produce a discharge in the biceps and when repeated a minute later produce a gastrocnemius discharge.

3. In some the *same pattern of response* was observed no matter which way the head was turned, and this distribution was not affected when the prone was compared with the supine position. For example, discharge in biceps, triceps, often wrist extensors, gastrocnemius, and hamstrings was one person's fairly consistent record despite variations in the eliciting maneuver. Another record showed yet another consistently distributed response, except that the lower extremities were three to four times as likely to respond in the prone position as compared with the supine position.

Recurrence or persistence in part or whole of the primitive tonic neck reflex of infants often occurs when there is an intracranial pathologic condition which is clinically upper motor neurone in nature. Recognition of this may be useful in retraining such a patient

For another subject, in the supine position the responses were almost entirely nonclassic. However, in the prone position his responses were mainly classic. Whereas in the supine position his TNR usually involved cocontraction of agonist and antagonist and frequently eventuated in clonus, no clonus or cocontraction occurred prone.

When another patient was in the supine position, the response was classic in the upper extremity and nonclassic in the lower. This was almost exactly reversed in the prone position. Lower extremity response in the supine position occurred only on turning the head away from the involved side. This association was not noted in the prone position.

4. If the number of responses recorded in the biceps is taken to be 100, Table I shows the number of responses recorded in the other muscles of this group of subjects, This table is included to indicate which muscles were most likely and which were least likely to participate in the reflex responses under consideration in this paper.

TABLE I—FREQUENCY OF REFLEX RESPONSES

Biceps	100
Triceps	59
Wrist flexors	31
Wrist extensors	37
Hamstrings	57
Quadriceps	21
Gastrocnemius	40
Anterior tibialis	11

The wrist flexors were twice as likely to fire in the supine position as in the prone, whereas the quadriceps were three times as likely to fire in the prone position. The other muscle responses were nearly equally divided between the supine and

prone positions except for an approximate 3:2 ratio of number of biceps responses favored by the prone position. The action potential of the anterior tibialis was usually small in amplitude and occurred infrequently.

5. The effects of *fist clenching* were usually quite inconstant. In one record it appeared to sometimes facilitate spread into distal musculature, whereas no effect as to which proximal muscles would discharge was noted. For this subject, unless the spike potentials were relatively high, there was a distinctly lesser tendency for distal musculature to discharge.

In another record, where passive turning of the head toward the spastic side had fired off the triceps, tight gripping by the uninvolved hand repeatedly produced either simultaneous firing of biceps and triceps with actual involuntary elbow flexion, or else elbow flexion with only the biceps firing. The associated reaction opposed and dominated over TNR in this case, and tended to produce elbow flexion no matter which way the head was rotated. For this subject, these statements applied only to the supine position. In the prone position, passive head rotation combined with clenching resulted in a flat record, apparently cancelling out the minimal TNR noted on simple passive rotation alone. However, when prone resisted head turning was used, a strong and consistent response of biceps and quadriceps discharge occurred and was not apparently affected by the addition of clenching.

These results are in some contrast to the clinical observations of others[2] that "a change in position of the head alone did not always cause a change in tone in the spastic-paretic limbs, but if an associated motion was brought about by a strong voluntary contraction in one of the unaffected limbs, the motion of the affected limb followed the pattern which the turning of the head alone should have elicited."

To continue with the above subject, clenching consistently increased the recorded voltage of the response in the supine position. The only exception occurred when rotation of the head toward the involved side was maintained against resistance. In this instance the addition of clenching did not increase the TNR response and seemed at times to decrease it. In the prone position clenching apparently had little effect, neither favoring nor inhibiting the tonic neck reflex.

6. We could not confirm Bobath's observations[3] that the TNR was most pronounced in the supine position. In fact, a slightly greater number of arm responses were elicited in the prone position. On the other hand, it was true that often for a given patient the TNR was more easily obtained on turning the head to a particular side, either right or left.

For the supine position the results corroborated Bobath's own experience and citation of Walshe who "found the reaction to be more pronounced if the patient turned his head actively and more so if the rotation was carried out against resistance."[3] No such relation was noted in the prone position.

Summary

The tonic neck reflex response is affected by a number of variables which make it difficult to lay down exact rules for eliciting a desired response. Careful individual observation and repeated trials with the patient in different positions is necessary if therapeutic advantage is to be taken of the TNR and associated reactions are to be controlled during retraining of the hemiplegic patient. In one patient the intensity or distribution of the TNR may be quite dependent on whether he is prone or supine, yet in another patient be independent of this. For another patient, TNR are in the same direction no matter which way the head is rotated. Associated reactions can favor a classic TNR or oppose and dominate over the TNR.

In the ambulatory hemiplegics observed, the TNR was partial rather than total and its distribution frequency in the test positions appears to favor certain muscles (biceps, triceps, hamstrings) over others (quadriceps, anterior tibialis).

When TNR testing is reported, factors to be mentioned should include starting position, especially whether prone or supine, and indicate what measures have been taken to control associated reactions.

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Forensic medicine as it particularly relates to pathology

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The problems of forensic medicine are so nebulous that it becomes a formidable task to illuminate even a few of the medicolegal situations confronting the pathologist, since he participates in the care of patients along with other physicians in almost every phase of disease.

Considerable confusion has arisen by the interchangeable use of the terms "medical jurisprudence," "legal medicine," and "forensic medicine." A useful differentiation makes "medical jurisprudence" to be that part of the law which is concerned with the regulations governing the professional practice of medicine. The terms "legal medicine" and "forensic medicine" by usage are synonymous, referring to that part of medical science which is utilized in the solution of legal problems. Any portion or branch of medical science may become an integral part of forensic medicine. In fact, the law has used whatever portion of medical science the occasion has called forth. In fact, any doctor who gives legal testimony in a professional capacity is practicing forensic medicine.

Pathology is that branch of medical science which deals with the causes and manifestations of disease. As an applied science, the practice of pathology is a form of medical practice, engaged in by physicians for diagnostic rather than therapeutic purposes. With the advance of medicine in all its phases, the diagnosis and treatment of disease have become extremely complex and integrated problems, demanding the utmost in skill and cooperation from all who participate in their management.

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The medicolegal problems inherent in the practice of pathology have been aptly stated by Moritz.[1] He places the problem in two categories:

> In one, their solution depends primarily on knowledge of the law, and in the other primarily on knowledge of pathology. Thus the question of what constitutes malpractice by a pathologist is basically legal whereas the application of the knowledge of pathology, to acquire and interpret evidence needed for the administration of justice, is basically scientific. The first is best characterized as medical jurisprudence and the second as forensic pathology.

Malpractice in pathology, as in any other field of medicine, befalls when the physician is charged with negligence or lack of due care in the performance of his professional duties.[1]

When a pathologist, or any physician, is charged with malpractice, the court must be presented by the plaintiff with a preponderance of evidence that failure to carry out his "professional duties at an average level"[1] was the proximate cause of the alleged injury. It is a necessary obligation for every pathologist, whether he practices in a general hospital or whether he devotes his time to legal medicine, to be conversant with the principles relating to malpractice. In fact, any professional act of a pathologist, or any physician, may be made the basis of a charge of malpractice. As the matter stands today, both the medical and legal professions are making every effort to increase the number of individuals in both professions who have the training and experience to handle adequately the ever-increasing number of medicolegal cases that present themselves for solution. Even having this solution for highly complex cases of legal medicine on the way will not negate the need for the pathologist in hospital practice to be thoroughly conversant with such problems as:

1. Authorization to perform an autopsy

2. Deaths reportable to the medical examiner or coroner
3. The medicolegal responsibilities of the pathologist in directing a hospital laboratory
4. The pathologist as an expert witness.

These are only a few of the subjects which might be covered in this presentation, but time will not permit the inclusion of any more.

Authorization to perform an autopsy

An autopsy should be performed only if authorized by the proper person or persons, or if ordered by the medical examiner or coroner. It might be pointed out that it is much more appropriate to use the phrase "authorization to perform an autopsy" than the trite expression "permission to perform an autopsy." A positive directive is given the pathologist by using the term "authorization" in contrast to merely being "permitted."[2]

As the general title of this presentation indicates, it behooves the pathologist to know who has the right to give authorization. In general, the next of kin, the person nearest in degree of blood relationship to the deceased, has the legal right to give authorization for autopsy, with the surviving spouse having the superior right. The "next of kin" is usually the person who is entitled to inherit the property of the deceased, if he died intestate (without a will). For example, surviving adult children each have the right to give autopsy authorization in the absence of a living spouse. A child who has provided for a parent is usually considered to have greater authority than a child who has shown little affection or responsibility for the parent. However, it is often difficult to ascertain the accuracy of such information at the proper time.

In the various states and in other countries, the designation of the "next of kin" may vary according to custom and legal statute. In some states only the father must give authorization for autopsy of a child under 21 years of age, while in others both the father and mother must give it. The mother only may give consent when she is the sole survivor of a child, or when she has been given sole custody following legal divorce from her husband. In the case of death of an illegitimate child of a minor, the maternal grandfather is conceded to be the proper person to grant consent for autopsy.

A surviving spouse, even though under legal age, may sign authorization for autopsy. Such an individual is considered an "emancipated minor."[2]

In some states a common law wife or husband of the deceased may sign authorization for autopsy, while in other states they may not.

Every pathologist encounters from time to time the problem of securing authorization for autopsy where there seems to be no living relative or executor. On occasion, when autopsy has been performed in good faith, in the belief that the signer of the permit has legal authority, a lawsuit may charge "mental anguish" suffered by a relative who has appeared upon the scene. It is sometimes necessary to decline the performance of an autopsy when no satisfactory individual can be found to give authorization.

It may be necessary to secure a reply by telegram when the nearest of kin is not available to give written permission. In such cases, the person sending the telegram must be instructed to sign the message, with a notation made in the telegram to that effect. Telephone arrangements should be discouraged because they are difficult to document.

These are only a few examples of the possible complications which may be encountered in securing a qualified person to give authorization for autopsy. Any one of us could relate numerous situations we have experienced through the years. Some hospitals provide legal counsel, even to the point of securing written, signed authorization before the pathologist proceeds with autopsy. Most of us do not have this service provided and must accept or reject the authorization upon our own judgment.

The authorization for autopsy must be in writing, signed by the persons legally qualified, and it should be countersigned by a witness. The form used by a leading hospital illustrates the essential features.[2]

_____ HOSPITAL
AUTHORIZATION FOR AUTOPSY
(to be signed by next of kin)

Date: _____

I, _____, bearing the relation of _____ and being the next of kin to _____, a deceased patient, do hereby grant permission to the authorities of the _____ Hospital to perform an examination of said body with the object of ascertaining the direct and indirect causes of death, and to the retaining of such tissues and organs as the Hospital deems necessary for complete examination.

1. Full autopsy (including head, (brain), spinal cord, as necessary) ☐
2. Restricted autopsy (specify): ☐
   Autopsy without head ☐
   Head only ☐
   Limited to existing surgical incision ☐
   Any other exceptions _____

_____ _____
Witness to signature Signature of Next of Kin

It has been customary for autopsy permits to consist of a general statement only, "authorizing complete autopsy to accurately determine the cause of death."[2] As the sample form illustrates, specfic written consent should be secured for unusual procedures as well as the retention of parts of the body, such as the aorta for surgical grafting and the eyes for corneal implantation. Failure to do so may elicit a claim of "mutilation."

In the process of securing authorization for autopsy, whether by the attending physician, senior house physician, resident, or intern, every effort must be put forth to make a simple, logical explanation as to why an autopsy is desired. All too frequently the average layman, at the moment of death of a loved one, thinks of postmortem examination only in unpleasant terms. He must be convinced that examination or study of the body will result in no disfiguration or mutilation and that it

will be carried out in the same way as a surgical procedure, by a specialist in pathology. Surprisingly, this fact is often not known about the pathologist. The average relative has no interest in the scientific approach. His is a personal problem of the moment, and a logical answer to his *why* must be given. If the nearest relative to the deceased is at the hospital at the time of death, it is often desirable to talk to him alone and to avoid discussions with a large group of relatives. The hospital physician responsible for the task must have a thorough understanding of the purpose and meaning of autopsy, as well as being familiar with the case at hand. Experience only can bring forth the reasons for autopsy, so evident to the physician, which must be developed in a relative's mind at the climax of bereavement. The reasons given depend upon the nature of the case as well as upon the relative's understanding of the problem.

It is important for the relative to know *why* the patient died, because clinical findings alone are often not sufficient.

Relatives may believe that autopsies are forbidden because of religious affiliation. To the best of my knowledge, none of the major religions forbid autopsy, whether Protestant, Catholic, or Jewish. In fact, there are historical accounts from all these groups which relate the use of postmortem examination to solve a health problem at hand. As one writer[2] has said, "Autopsies are permitted when human life can be saved thereby; when the dead are honored." Occasionally one encounters personal prejudice against autopsy where nothing is to be gained by argument, even though authorization is not secured.

Although many of the problems encountered in securing autopsy permission are not the direct responsibility of the pathologist, it is he who inherits the hostile attitude of relatives who have "merely given consent for an autopsy." Then, they say, the pathologist mutilates the body of the deceased, causing them "mental anquish" and giving possible grounds for a malpractice claim against the attending physician, hospital, and pathologist.

Deaths reportable to the medical examiner or coroner

Immediately following the death of a patient, it is the responsibility of the attending physician or his designate to determine whether or not the case is one that should be reported to the medical examiner or coroner. If the circumstances of death are clearly accidental or the result of foul play, there is no question of the medical examiner's jurisdiction. It is the dubious case that concerns the pathologist. Many times when authorization for autopsy has been secured in good faith, the pathologist surveys various aspects of the case and finds that other than organic causes may be involved in the patient's death.

Wherever one practices, and in whatever branch of medicine, one must have a thorough knowledge of what constitutes "a reportable case." It is at this point that the pathologist can be led blindly into medicolegal difficulty, not only for himself but for the attending physician and hospital as well. If there is any question about the status of the case, it should be clarified at once through the medical examiner. An autopsy comes to mind in which hepatic cirrhosis and splenomegaly, possibly due to carbon tetrachloride poisoning several months before, were the evident organic findings. Because of the lapse of time since poisoning, the case was not reported prior to autopsy. The medical examiner took jurisdiction of the case when he received a report of such a death from the State Bureau of Vital Statistics, and accepted the complete autopsy findings and reports of the hospital pathologist. In a recent case, the death of a patient was reported to the medical examiner in which the history revealed the occupation of radium-dial painting over 25 years ago. Jurisdiction was taken.

Should evidence of undisclosed trauma or other suspicious factors arise during the course of an autopsy, it should be immediately stopped and reported. Further disposition will be governed by the medical examiner.

Whenever there is an element of doubt about a case, call the medical examiner's office. Incorporate a written memorandum into the patient's chart (a progress note), specifying the time, decision, and who made the decision, with signature or name of individual receiving the information. This documentation is particularly important because such arrangements are usually made by telephone at odd hours.

Each state and locality has established, by law and custom, procedures to be followed in all cases in which death is unattended by a physician or is not entirely due to natural disease. In some instances, the legal statute goes no further than this general statement, leaving the medicolegal problems which arise in a given case "in the lap of the gods." The medical examiner system is being developed in certain states and many larger cities of the United States, in contrast to the outmoded coroner system. For example, the medical examiner of Philadelphia[3] clearly specifies those deaths which are reportable, as follows:

1. Deaths resulting from external violence of any kind.
2. Deaths resulting from any disease in which an external force acted as a contributory cause.
3. Any homicide or suspected homicide.
4. Any suicide or suspected suicide.
5. Any death occurring as the result of or subsequent to an accident, regardless of the nature of the accident or the time interval between accident and death, if any possible relationship between the accident and death can be assumed. The decision as to whether a traumatic factor is contributory or not to death rests with the Medical Examiner.
6. Any death of a woman, or a fetus over 16 weeks' gestation, caused by a criminal or self-induced abortion or an attempted or suspected criminal or self-induced abortion.
7. Any stillbirth of 16 or more weeks' gestation unattended by a physician.
8. Any death due to poisoning or suspected poisoning.

9. Any death unattended by a physician.

10. Any death occurring within jail or prison, or resulting from an illness or injury originating while in jail or prison.

11. Any death which may be related to, the result of, or associated with the decedent's occupation.

12. Any death occurring during an operative, diagnostic, or therapeutic procedure, including deaths as a result of new or experimental therapeutic procedures.

13. Any death which occurs while the patient is under anesthesia or fails to recover from the effects of anesthesia.

14. Any death caused or contributed to by electrical, heat, cold, the elements, or radiation injury.

15. Any death due to acute alcoholism.

16. Any death of a narcotic addict.

17. Any death in which the diagnosis is suspected to be homologous serum jaundice, agranulocytosis, or aplastic anemia.

18. Any death due to neglect.

19. Any death in which the cause of death is uncertain or unknown.

20. Deaths in nursing homes or other institutions without recent medical attendance.

21. When any suspicion arises during the course of an autopsy in a case not originally believed to be a Medical Examiner's case, the autopsy should be stopped at once and the case reported to the Medical Examiner immediately.

22. Any death in which there is doubt as to whether or not it is a Medical Examiner's case.

Medicolegal responsibilities of the pathologist in directing a hospital laboratory

It can be said without significant reservation that the pathologist who is the director of a hospital laboratory will bear legal responsibility for the acts of malpractice committed by that laboratory. It may be true that the hospital itself will bear the burden, but the pathologist is not relieved thereby.[4]

It will be possible to discuss only a few of the many problems that arise in a well-conducted laboratory which may become of medicolegal importance to the pathologist, the laboratory, the hospital, and the attending physician.

The retention or disposal of surgical and autopsy specimens can be of medicolegal importance to the hospital pathologist. This subject was clarified by a directive sent to each osteopathic pathologist in 1952 by the American Osteopathic Board of Pathology, setting forth certain requirements for osteopathic hospitals. This directive was approved by the Advisory Board of Osteopathic Specialists and the Board of Trustees of the American Osteopathic Association. It reads as follows:

> . . . all more important specimens such as precancerous or cancerous lesions, viscera in which malignancy has been suspected but not found, ruptured uteri, or any other specimens of medicolegal importance, be stored in whole or in the form of an adequate or representative sample until *six months after the statute of limitations of the state* in which the practice of pathology is being carried out, has been reached.

The statute of limitations is 2 years for tort and 6 years for contract in the Commonwealth of Pennsylvania; therefore, the interval of time for retaining such specimens would be 6½ years, should they be needed for evidence in a lawsuit, assuming that a minor is not involved.

The retention of such specimens *in toto* for this period would be quite space-consuming for even a small hospital. It has become the established practice in the majority of hospitals throughout the country to retain the specimen slides indefinitely, and perhaps the remainder of the paraffin blocks. There is considerable variation relative to keeping the gross specimen, either in whole or in part. It is the opinion of many legal authorities that the slides and paraffin blocks are "in fact" truly adequate and representative samples of the gross specimen. Should the trend of events so indicate, it may become necessary for all hospitals to save gross specimens for the specified time.

Certain patients feel a keen sense of possession for an extremity removed at surgery, even to the point of directing that it be preserved by a mortician until their subsequent death, so that it may be interred with their body. Other patients have no such sentimental attachment. In order to obviate any medicolegal situation for the pathologist or the hospital, a signed and witnessed statement such as the following will suffice.

_____ HOSPITAL
DEPARTMENT OF PATHOLOGY

I, _____, give permission to the _____ Hospital for the final disposition of my extremity, removed on the date of _____, by Doctor_____.
Description of extremity removed (identify):_____

Remarks:

Signatures: Patient_____
Witness_____
Date_____

Note: 1. This form must be properly signed in *duplicate* before the patient is dismissed from the hospital, being executed by a resident, intern, or attending physician.

2. Should the patient request disposal of the extremity in a special manner, record under "Remarks" with signature of patient.

3. Attach one signed copy to the patient's chart for permanent record, and return the other signed copy to the Department of Pathology for filing and stapling to the Tissue Report.

The question arises relative to the right of the pathologist to retain surgical or autopsy specimens for pathology museum purposes. Concerted legal opinion is that there is no liability providing the specimen remains anonymous and that sufficient time has elapsed. In this case the specimen, if not asked for, could be treated as though abandoned. There seems to be no law in this regard, and the foregoing statements are based upon general legal principles. Of course, it is understood that the autopsy authorization specifically states that tissues and organs may be retained for further study. There seems to be common agreement that this way of handling specimens through the years has been satisfactory not only from the personal standpoint, but from the standpoint of the physician as well.

In fact, the contribution of pathology to diagnosis and treatment of disease has made the most rapid progress when amiable relations have been established and maintained. It has been so aptly stated that an autopsy provides to the deceased person his last opportunity to contribute to the physician's increased knowledge of disease. It is well known that the technic of appendectomy was advanced by repeated postmortem examinations of patients dying from appendicitis.

Pathologists must continue to do their part in keeping the medicolegal aspects of the autopsy on a high plane of performance so that there can be no reason for complaint.

I have not been able to find a distinct statement relative to the extent to which the pathologist as director of a hospital laboratory might be legally responsible for the negligence or mistakes of technicians. With the ever-increasing complexity and magnitude of diagnostic procedures which are becoming an integral part of the mid-twentieth century care of hospital patients, it is very evident that the pathologist is placed in an exceedingly vulnerable position for malpractice allegations.

If the pathologist were sued because of an erroneous result on a serologic test for syphilis performed by a technician, he would need to show that the laboratory was conducted and supervised in such a manner that the technicians performed their work with an average degree of knowledge, judgment, skill, and care. All of these matters should be recognized as standard and acceptable procedure as followed by other pathologists in the community in supervising their technicians and confronting the same problems of error.

The reported errors of technicians and nurses working under direct and indirect supervision have often been the subject of malpractice litigation. The acts of a nurse on a surgical team usually are under the direct supervision of the surgeon. However, in the case of a nurse doing routine hospital work, she usually performs such tasks without direct supervision of a physician, and the doctor probably would not be responsible for her actions, although the hospital would be as the nurse's employer. Some decisions hold that the surgeon is responsible for the acts of the nurse under his direct supervision but not for the acts of the nurse carrying out orders indirectly.

The most vulnerable point today for the pathologist who directs a hospital laboratory may lie in the problem of blood transfusion. Death of a patient following a blood transfusion may result in a civil malpractice action against the hospital, attending physician, pathologist, and technicians, as well as the physician who performed it. Such a case would require the various defendants to establish that they exercised due care if an injury or fatality occurred. It is entirely possible that the result was caused by factors other than blood transfusion. The blame is all too frequently placed upon "transfusion reaction" during the agonal crisis of the patient when other factors deserve just as careful scrutiny.

The problem of incompatible blood transfusions has been the subject of much study and evaluation from both medical and legal standpoints. One of the most significant reports to appear on the subject comes from Kings County Hospital Center in New York, and was published in January 1959.[5] For the 6-year period between 1952 and 1957, 81,392 blood transfusions were given, with only 30 patients reported to have been transfused with improper blood. This gives a ratio of 1:2,713. If only those cases presenting hemolytic reactions are considered, only 18 cases are left, giving a ratio of 1:4,520 for 81,392 transfusions. In spite of the fact that various reform measures were taken during the 6-year period, the same constancy of errors occurred. Misgrouping of blood seemed to be the most common mistake, followed by the inadvertent substitution of one patient's blood for another. The persistence of the same human errors in spite of extensive and elaborate measures to eliminate them suggests their inherent irreducible quality, with these human errors distributed equally among the various individuals handling the transfusion.

Further analysis of this study of 81,392 transfusions in which 30 reactions were reported, only 7 patients died, or a ratio of 1 death in 11,500 transfusions, as compared with the literature of the early 1940's, which yielded 1 death in 915 cases. A review of the literature of the same period of the 1940's by Kilduffe and DeBakey[6] reports on 43,284 transfusions, with 1 death for 962 cases. The significant improvement in the relative safety of blood transfusions during the past 15 to 20 years, from 1 death in 915 or 962 transfusions to 1 death in 11,500, is a fact which should be clearly emphasized when difficulties arise.

It is beyond question that continued improvements must be sought in the phases of requisition, preparation, transportation, and finally the transfusion of blood.

A more hopeful approach seems to lie in the education of the responsible physician to the proper indications for blood. It is interesting to note that 6 of the 7 deaths just mentioned were associated with blood transfusions of questionable necessity. Some authorities state quite bluntly that a patient receiving only one unit of blood has no reason to benefit from a transfusion at all, and may inadvertently die from receiving it. Be this as it may be, the transfusion has been ordered, administered, and a reaction reported. It then behooves the pathologist directing the blood bank to set into action immediately an orderly procedure to see whether or not a reaction has occurred. It is essential to save pretransfusion blood samples in order to have the necessary samples on hand when needed. The results of all such tests should be accurately recorded on the patient's chart.

In summary, there are three things which will be investigated and evaluated in the event of transfusion reactions, and these same factors must be continually kept foremost in mind if blood transfusion is to be made an even safer procedure:

1. Limiting transfusions to those cases where a definite indication exists
2. "Eternal vigilance in all aspects of blood banking"
3. Adherence to the highest standards of pretransfusion testing.

The minimum standards which should be followed are those set by the American Association of Blood Banks.[7] It is not the intent of this presentation to give these technical procedures, but rather to call attention to their utmost importance in judging quality of performance of technicians, should allegations of malpractice be made. Each case must be evaluated upon the basis of the circumstances attending it.

The pathologist as an expert witness

As an expert witness, the pathologist occupies the same position as any other such witness. He may be called upon to testify relative to the professional services he has performed in a particular case. Complete and adequate records must be maintained at all times, not only in regard to autopsies but in every field of endeavor. Every care should be exercised not only in the performance of the autopsy, but in the recording of findings. The protocol should be complete in every detail, even to the extent of taking pictures at progressive stages of the examination. If you are not equipped for photography, the police force may oblige in this capacity, particularly in accident cases and those in which foul play is suspected. Remember, you may be required to testify on your findings. Often, this request comes a year or more after the examination when memory for detail has lessened, unless sharpened by a comprehensive and detailed written report. Negative findings often play an important part in medicolegal cases and should be recorded. For example, if a patient dies following an operation for a ruptured viscus, was the repair intact? Describe the precise anatomic relationships, and take photographs if necessary. Such information will greatly strengthen your testimony as an expert witness and will be invaluable to the attending physicians on the case. Do not under any circumstances omit an item, thinking it will protect someone. I expressly recall a case I handled some time ago, in which death was caused by hanging. As the autopsy examination progressed, we found a ruptured uterus packed with gauze. A portion of the gauze had been thrust through the uterine wall into the abdominal cavity. This finding completely changed the nature of the investigation, leading to a confession of murder. Even if the remainder of an autopsy is favorable to the defense of a given case, the omission of a vital description might even negate all the testimony you have given, which will be more damaging in defense of the case than an unabridged account.

As an expert witness, you may be called upon to give opinion on a case with which you have had no prior contact. Your opinion will be asked in a hypothetical question based upon facts in evidence in the case being tried. Be absolutely objective, factual, and unbiased. Medical facts are well known for "exceptions to the rule" which credibly allow the expression of your opinion. In fact, it is often the pathologist's knowledge of these exceptions that make his testimony so valuable. Young men who have not had the experience of vigorous and often embarrassing cross-examination hurled at them can well heed the need for medical impartiality, regardless of the type of litigation.

Summary

The medicolegal problems inherent in the practice of pathology depend upon knowledge of the law on one hand and knowledge of pathology upon the other. When a pathologist is charged with malpractice, the court must be presented by the plaintiff with a preponderance of evidence that there was a causal connection between the alleged injury and the failure on the part of the pathologist to carry out his "professional duties at an average level," and that such failure was the proximate cause of the injury. It is the necessary obligation of every pathologist to be thoroughly conversant with the subject of malpractice. The following problems have been considered in this presentation:

1. Authorization to perform an autopsy
2. Deaths reportable to the medical examiner or coroner
3. The medicolegal responsibilities of the pathologist in directing a hospital laboratory
4. The pathologist as an expert witness.

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Sickle-cell anemia: Case report

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Sir William Osler, who designated syphilis as the "great imitator," might also have suggested sickle-cell anemia as the "little imitator." The similarity of action of the two diseases lies in the disturbance of the vascular systems of various organs, although by differing pathophysiologic mechanisms.

Sickle-cell anemia, as defined in Harrison's *Textbook of Internal Medicine*,[1] is as follows: "This is a hereditary and familial hemolytic anemia, essentially peculiar to Negroes and characterized by the presence of red corpuscles which, under appropriate conditions, assume sickle-shaped or oat-shaped forms."

In Negroes essentially two forms exist: the sickle-cell trait, which is asymptomatic; and sickle-cell anemia, which manifests the symptoms of a chronic hemolytic anemia.

The former results from a heterozygous gene status affecting the hemoglobin, and the latter results from the homozygous state. As a consequence of the abnormal hemoglobin (in sickle-cell anemia), when the erythrocyte is deprived of oxygen, it assumes the sickle-cell form. Conditions which favor stasis and hypoxia affect the sickling and increase the mechanical fragility of erythrocytes.

This paper is a discussion of a sickle-cell anemia victim. The case had several perplexing clinical and laboratory findings which made diagnosis and treatment challenging.

Case report

The patient was a 6-year-old Negro boy, one of five children. One sister, 2 years of age, had also been diagnosed as having sickle-cell anemia. He was first seen on April 17, 1958, complaining of pain in the left knee of 3 days' duration, following an upper respiratory infection 2 days previously. His first episode of articular pain occurred at the age of 2 years.

Examination revealed a temperature elevation of 100.4 F (rectally), a mild pharyngitis, cervical and inguinal lymphadenopathy, and muscular "spasm" of the left thigh. The diagnostic impressions at this time were (1) sickle-cell anemia, (2) possible septic arthralgia, and (3) possible rheumatic fever.

The patient was admitted to the hospital on the pediatric service for a diagnostic work-up. Laboratory data included the following: erythrocyte sedimentation rate, 17½ mm. per hour; C-reactive protein, 3 plus; Mantoux test, negative; blood culture, negative for growth in 72 hours; antistreptolysin titre, 250 Todd units; packed cell volume, 32 per cent; and hemoglobin, 8.7 grams per 100 cc. The electrocardiogram was within normal limits. A posteroanterior chest film showed no pulmonary disorders, but there was left ventricular hypertrophy. Anteroposterior and lateral films of the left knee were considered equivocal, although there was some increased density in the endosteal bone, representative of bone infarction. There were also fine transverse bone growth arrest lines in this area.

The treatment at this time consisted of bed rest, forced fluids, and antibiotics, after which the patient was discharged on April 21, 1958.

The patient's progress was followed closely in the hospital outpatient department for 6 weeks, during which time hemoglobin electrophoretic studies revealed the "SS," or homozygous sickle-cell hemoglobin, to be present.

On April 25, 1958, the pediatric resident stated that although there was no local pain in the left knee, the child continued to limp. Succeeding visits to the clinic revealed complaints of pain in both knees and hips, varying in degree and site of

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involvement between left and right lower extremities. The child was referred to the Orthopedic Resident Clinic on May 22, 1958. At this time the child was limping "so as to avoid hip motion as well as knee elevation."

Examination revealed pain in both hips, more severe on the left than on the right. Patrick's test (fabere sign) was positive bilaterally. The left hip motion demonstrated pain on abduction, flexion, and internal and external rotation; whereas the right hip was painful primarily on internal rotation.

On observation of gait, it was noted that the child favored the left hip; flexion of the left hip to 50 degrees was accompanied by severe pain, whereas the right hip was painful only at more extreme flexion or internal or external rotation. The leg lengths were equal.

Roentgenograms of the pelvis revealed that the caput femoral epiphysis on the left demonstrated severe bone infarction with aseptic necrosis. The head was flattened and there was the illusion of a widened joint space on the left as compared to the right. A slight thickening of the left femoral neck was apparent. The ala of the iliac bones revealed granular porosity of a nonspecific nature.

Laboratory data at that time were as follows: erythrocyte sedimentation rate, 44 mm. per hour; packed cell volume, 31 per cent; erythrocytes, 3,400,000 per cu. mm.; and leukocytes, 12,450 per cu. mm. A bilateral spica cast was applied to the lower extremities, and the patient remained asymptomatic while immobilized in this manner.

In February 1959 the cast was changed for the second time. Blood studies taken at that time were as follows: packed cell volume, 26 per cent; hemoglobin, 8.7 grams per 100 cc.; leukocytes, 17,000 per cu. mm.; and erythrocytes, 3,210,000 per cu. mm. Roentgenograms taken on February 11 showed healing changes, particularly in the left hip. The head was more flattened, and the metaphysial area of the femoral neck was broadened. An area of the right femoral epiphysis had developed a cortical infarction with bone resorption. A double spica cast was applied at this time, and the child was discharged to home care.

On May 13, 1959, the cast was again removed. Roentgenograms of the pelvis, including lateral views of both hips, revealed smoothening of the left femoral epiphysis with replacement of the previously infarcted areas. The right femoral epiphysis revealed progressive changes of necrosis and fragmentation. The flattening of the epiphysis was now more evident on these films.

Some endosteal new bone formation was noted at the middle of the left femoral shaft; this was seen as two longitudinal lines of increased bone density located in the intramedullary space.

While at home the child developed a second upper respiratory infection. This was accompanied by extreme pain in the distal fourth of the left leg. When seen in the clinic 2 days after the onset, the patient was febrile (101.8 F), and the distal left leg was edematous, markedly warm to touch, and painful in an area 3 inches above the ankle. There was no knee or hip complaint at this time. The patient was unable to move the left ankle without pain. Besides the temperature, clinical signs included a pulse rate of 122 per minute, respirations of 22 per minute, and a blood pressure of 160/100.

Examination of the head and neck demonstrated slight scleral icterus and moderate cervical lymphadenopathy, nontender to palpation. The conjunctiva were pale. Auscultation of the chest showed no cardiac murmurs; there was a sinus tachycardia of 122 beats per minute; and the lung fields were clear. No splenomegaly, hepatomegaly, or other abnormal abdominal findings were elicited. Neurologic findings were noncontributory.

The differential diagnosis considered sickle-cell crisis, osteomyelitis, and rhematic fever.

Laboratory data were as follows: hematocrit, 27 mm.; hemoglobin, 8.5 grams per 100 cc.; leukocytes, 10,600 per cu. mm.; erythrocyte sedimentation rate, 1.0 mm. per hour; urinalysis, negative except for bacterial cells; Mantoux, coccidioidin, and histoplasmin intradermal tests, negative; antistreptolysin titre, 500 Todd units; C-reactive protein, 3 plus; cephalin flocculation, 1 plus; serum albumin, 3.7 grams per 100 cc.; and serum globulin, 3.2 grams per 100 cc. The electrocardiogram showed a sinus arrhythmia and left ventricular hypertrophy. A posteroanterior chest roentgenogram showed a fine linear density of the right lung base with plate atelectasis. A small segment of atelectasis was seen with no effusion, and the right leaf of the diaphragm was irregular. A lateral view of the skull was negative.

The treatment instituted was bed rest, hydration, and administration of Gantrisin pediatric suspension. The left ankle was immobilized, using a posterior plaster splint, with considerable relief of pain.

On the sixth day the temperature registered 100.2 F orally. The left leg pain, which had diminished, now grew more intense. Febrile antigen test performed at this time was returned negative.

On May 30, 1959 (ninth day), the patient developed postprandial emesis. Intravenous fluids and antibiotics were instituted. Sedimentation remained at 1.0 mm. per hour. The leukocyte count increased to 16,200 with a differential of 70 per cent segmented neutrophils, 10 per cent stab cells, 4 per cent eosinophils, and 16 per cent lymphocytes.

On June 5, 1959, the patient was clinically improved but complained of tenderness in left thigh. Local warmth and edema prompted a roentgenographic survey which was reported as showing changes similar to osteomyelitis.

On June 9, the patient grew more acutely ill, demonstrating signs of congestive failure. Right pleural effusion, hepatic enlargement, and cardiac enlargement responded to digitalization. The blood pressure stabilized at 120/80 and dyspnea decreased, only to recur on June 21 as sinus tachycardia and tachypnea.

A thoracentesis afforded relief from dyspnea. Laboratory examination of the pleural effusion proved it to be sterile. The packed cell volume had dropped to 16 per cent, with less than 4 grams of hemoglobin. The leukocyte count was 20,500 per cu. mm.

The patient was redigitalized and broad-spectrum antibiotics were ordered. Transfusions given slowly elevated the hemoglobin to 7.2 grams and packed cell volume to 32 per cent.

Gradual improvement commenced from this period. The left thigh and distal leg became asymptomatic. On July 30, 1959, the patient was discharged home. Examination of the hips revealed no pain on abduction, rotation, or flexion, but residual restriction remained at approximately 80 per cent of normal.

Pathology

Examination of bone marrow in patients with this condition has shown that the hyperplasia is present in the flat and cancellous bones of the body trunk as well as in the shafts of such long bones as the tibia and femur. The color of the marrow varies according to the severity of congestion, the amount of fatty marrow, and degree of the pathologic process.

Microscopically, the marrow is congested with numerous cellular components. The capillaries are filled with sickled cells, and the red color of the marrow is not entirely due to excessive erythrogenesis. The predominant nucleated cells are of the undifferentiated type with neutrophilic and eosinophilic granulocytes in all stages of development. Nucleated erythrocytes are both round and sickled in shape. Many large mononuclear cells contain within their cytoplasm ingested erythrocytes, nuclear fragments, and pigment granules.

In addition to abnormal hematopoiesis, the marrow demonstrates evidence of degenerative and reparative processes. Lesions including thrombosis, infarction, necrosis, hemorrhage, granular and crystalline pigment deposits, hyalinization, fibrosis, abnormal calcification, and new bone formation have been found. As in other organs of the body the essential processes are congestion, thrombosis, and connective tissue replacement.

The changes seen in bone structure result from two opposing processes. One process in the hematopoietic tissues of the hyperplastic marrow tends to increase its volume at the expense of bone. These changes are primarily seen in the flat bones, usually the ribs and skull. The changes may be demonstrated on roentgenograms as an increase in the skull thickness, absence of a well defined outer table, osteoporosis, and well pointed trabecular striations radiating outward from the inner table and perpendicular to it. Several cases have shown evidence of areas of increased radiability, varying in size and distribution and somewhat resembling metastatic malignancy or multiple myeloma.

These isolated radiolucent areas may be found in vertebral bodies as well. Vertebral bodies in adult patients may be flattened as a result of weight bearing on osteoporotic structures. Examination of gross specimens shows invasion of the medullary components into the cortical bone, even into the haversian system, giving the bone a honeycombed appearance. Although the inner table of the cortical bone is primarily involved, some specimens reveal periosteal involvement.

In the long bones, such as tibia and fibula, whose function is not normally concerned with hematopoiesis, the second process predominates. This is the sclerosing replacement of marrow by osteoid tissue or new bone.

Examination of gross specimens of long bones reveals widening of the medullary canal and the diameter of the shaft with expansion of the diaphysial extremities, increased radiability, prominent trabeculations, and increased density of the ossification zone (in children).

The sclerotic lesions of the tibia and fibula demonstrate no specific findings for differential diagnosis of sickle-cell anemia; however, the most common abnormalities are cortical thickening, narrowing of the medullary canal, and abnormal trabecular markings. The cortex may be uniformly thickened or limited to one area, usually the middle of the lower half. Often longitudinal lines of decreased density are seen in the thickened cortex, simulating a spongy appearance. In some bones the medullary canal and cortex appear to fuse, giving the impression of a cancellous shaft with coarse linear markings.

New bone formation within the shafts of the long bones usually takes the form of delicate linear trabeculae, but in some instances takes the configuration of concentric layers of laminated bone adjacent to the cortex and parallel to it, or of thin sheets of bone perpendicular to the cortex.

In the end stages of the sclerosing process the osseous structure is grossly disarranged, and the normal relationship of the medullary canal and cortex is destroyed. Bizarre combinations of increased radiability and density are found, which simulate the changes in chronic inflammation or cystic disease.

Although the changes found in the femur, humerus, radius, and ulna are somewhat similar to those in the tibia, the bones of the wrist, hands, and feet present no marked roentgenographic changes.

Discussion

Patients having sickle-cell anemia often present bizarre and complicated symptom complexes. Because of the very nature of the disease one or several organ systems may be involved either simultaneously or successively.

The young Negro victim in the present case offered considerable difficulty in diagnosis until sickle-cell anemia was definitely established. When

first seen in 1958, the primary complaint was pain in the left knee of 3 days' duration. The differential diagnosis between septic arthritis, rheumatic fever, and sickle-cell anemia proved to be challenging.

The distribution of hip pain to the medial thigh, groin, and knee is noted in this case. Pain on flexion, abduction, and rotation was bilateral but more severe on the left. No local warmth, prominent trochanters, or pronounced inguinal lymphadenopathy was found. The fever does not necessarily indicate an acute septic reaction, as is found in most septic arthralgias.

The aseptic necrosis of the caput femoral epiphysis, known as coxa plana, osteochondrosis of the hip, or Legg-Calvé-Perthe's disease, is usually found in children between the ages of 4 and 10 years, and predominately in males. Bilateral incidence is reported as 15 per cent. The cause of the vascular disturbance is unknown in this disease, but experimentally ligation of the ligamentum teres and stripping of the periosteum from the femoral neck has reproduced the pathologic change.

The symptoms of limp, at first slight but gradually becoming pronounced, together with pain which may be vague or described as ache in the groin, medial thigh, or knee, is indicative of hip disease. This was found in the patient in this case. This symptom complex was accompanied by adductor spasm, with pain on abduction and external rotation.

Roentgenographic evidence of Legg-Calvé-Perthe's disease is as follows:

1. Early signs of synovitis—prominence of soft tissues over capsule
2. Joint space appears widened—this is only apparent
3. Decreased density of proximal end of metaphysis, due to hypervascularity and osteoporosis
4. Broadened and shortened femoral neck
5. Increased density of the head
6. Femoral head flattened and widened
7. Fragmentation—complete decalcification as vessels invade and resorb bone
8. Restored femoral head, which varies in size and shape (may be normal, cup-shaped, or mushroom-shaped).

In sickle-cell anemia, the processes of thrombosis, infarction, and necrosis may occur in any organ. Those tissues, such as bone marrow, which have extremely low oxygen tensions are more susceptible to the sickling pathologic process.

What was seen in this 6-year-old patient was the result of recurrent episodes of stasis, engorgement, thrombosis, and infarction. The bone necrosis which follows will simulate aseptic necrosis of unknown etiology. There is no reason why it should not. However, we were not dealing with two diseases in this patient, but rather a single pathologic-physiologic phenomenon of diffuse systemic involvement.

The evidence of a slightly increased antistreptolysin titre, 3 plus C-reactive protein, slightly elevated leukocyte count, and elevated sedimentation rate indicated the possibility of rheumatic fever. The cardinal signs of this disease are polyarthritis, carditis, chorea, subcutaneous nodules, and recurrent attacks. The electrocardiogram usually reveals a prolonged P-R interval and cardiac changes. Of these signs, only arthralgia was presented.

Negative intradermal tests for tuberculosis, coccidioidomycosis, and histoplasmosis diminished the possibility of these disease processes. Negative blood culture on many occasions during hospitalization negated an acute embolic septic condition. The original chest roentgenogram was negative for pulmonary disease.

On May 19, 1959, the patient experienced acute pain in the distal fourth of the left leg, for which he was hospitalized. The appearance of the affected area strongly suggested osteomyelitis.

Patients with sickle-cell anemia often have attacks of severe migratory joint pain associated with fever, leukocytosis, and signs of inflammation. The symptoms subside in a few days or weeks, leaving no residual deformity or roentgenographic changes.

These patients are also subject to localized bone pains which, together with fever and leukocytosis, may simulate osteomyelitis. However, surgeons who have trephined such areas discovered no exudate, and the cultures were found to be sterile. The engorgement and distention of the medullary canal are believed to account for the localized bone pain of a sickle-cell crisis. It is believed that these signs and symptoms are a result of circulatory abnormalities such as severe stasis, multiple capillary thrombi, and, in some instances, to thromboses of larger vessels with infarction and necrosis. Such infarcted foci heal by scarring, in which there is an osteoid deposit resulting in irregular sclerosis as is sometimes seen in x-ray films of the long bones.

This does not infer that osteomyelitis is not found, however. Other investigators have shown that osteomyelitis, particularly due to staphyloccus and salmonella, is more frequently seen in sickle-cell anemia patients than in otherwise normal patients.

The bony alterations seen in prolonged cases of sickle-cell anemia strongly resemble those seen in inflammatory diseases of bone, and it is often difficult to determine which changes may be due to the sicklemia and which to the infective processes.

In both osteomyelitis and sicklemia there may be thrombosis, infarction, and necrosis. Osteosclerosis may produce varying densities of the cortex in different areas of the same bone, abnormal trabecular markings, and bizarre combinations of increased and decreased densities as found in both sickle-cell anemia and osteomyelitis.

Summary

This paper describes the bone changes found in a 6-year-old male Negro with sickle-cell anemia. Evidence of bone necrosis and intramedullary new bone formation are rarely found to this degree in so young a patient. Bone changes as found were unusual and led to difficulties in diagnosis.

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Morphologic characteristics of striated muscle demonstrated by various histologic technics

[redacted]

Correction • An omission occured in Table I, page 208, of the article by W. V. Cole, D.O., A. P. Kline, Ph.D., and J. E. Mielcarek, D.O., published in the November JOURNAL; the dilution of the dyes was not given in the methods for fluorochroming. The corrected table is reprinted below.

TABLE I—EFFECTIVE FLUOROCHROMING FOR MUSCLE

Dye or dyes (each diluted 1:10 in Ringer's solution)	Fluoro-chroming time	Fluorescence observed (wave length—3700A)
1. Coriphosphine C.I. no. 46020	30 sec.	Fibers: distinct light green
2. Rinse in Ringer's solution	30 sec.	Nuclei of muscle and connective tissue: distinct pale green (well differentiated from fibers) or orange
1. Acridine orange C.I. no. 46005	30 sec.	Fibers: distinct light green
2. Rinse in Ringer's solution	30 sec.	Nuclei muscle: yellow green Nuclei connective tissue cells: green or orange
1. Rhodamine B C.I. no. 45170	30 sec.	Muscle fibers: orange yellow
Rinse	30 sec.	Nuclei: intense yellow
2. Berberine C.I. no. 1237	30 sec.	Connective tissue fibers: pale red
Rinse	30 sec.	Endothelial cytoplasm: pale red
3. Coriphosphine C.I. no. 46020	30 sec.	
Rinse	30 sec.	
1. Coriphosphine C.I. no. 46020	30 sec.	Muscle fibers: light green
		Nuclei: yellow
Rinse	30 sec.	Connective tissue: pale red
2. Berberine C.I. no. 1237	30 sec.	Endothelial cytoplasm: pale red
Rinse	30 sec.	Endothelial nuclei distinct
3. Erythrosin B C.I. no. 45430	30 sec.	in blood vessels
Rinse 45430	30 sec.	
1. Acridine orange C.I. no. 46005	30 sec.	Muscle fibers: green
		Nuclei: extremely intense
Rinse	30 sec.	yellow or orange, with
2. Coriphosphine C.I. no. 46020	30 sec.	very distinct outlines
Rinse	30 sec.	
3. Entozon Granulate C.I. no. 12040	30 sec.	
Rinse	30 sec.	
1. Coriphosphine C.I. no. 46020	30 sec.	Muscle fibers: blue-green
		Nerve fibers: yellow
Rinse	30 sec.	Connective tissue: brown
2. Entozon granulate C.I. no. 12040	30 sec.	or yellow Nuclei: yellow (not intense)

Topical application of menadione, a synthetic vitamin K: Preliminary report

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Vitamin K is known to be an important element in the blood-clotting mechanism, specifically in the formation of prothrombin, and vitamin K preparations are usually available in clinical practice to offset excessive response to anticoagulant agents. For conditions requiring topical treatment, however, as in the field of dermatology, vitamin K has not been thought to have any specific usefulness. It has generally been assumed that the substance would be inert—that it would have no effect on the skin surface, either toxic or beneficial. That it might be absorbed through the skin, however, was indicated by the work of Russell and Page,[1] who in 1941 successfully used a synthetic vitamin K analogue topically to affect the prothrombin level in newborn infants. More recently it has been stated that the lipid-soluble vitamins A, D, and K "penetrate the skin with ease."[2]

With regard to toxicity, it was reported[3] in 1949 that of all the vitamins only thiamine and vitamin D were considered toxic under certain clinical conditions; vitamin A was later added to the group of potentially toxic agents.[4] It now appears that some vitamin K substances are toxic in parenteral administration,[5] and some also exert toxic effects when applied to the skin.[6] In the latter instance, however, there is new evidence indicating that such toxicity may be turned to beneficial use in the treatment of certain skin lesions. Results of preliminary tests using menadione are presented here in the hope of stimulating investigations by other workers into the topical effects of the whole range of vitamin K substances. It should be emphasized that the clinical observations reported are merely suggestive. Specifically organized and controlled studies are necessary to determine whether vitamin K may be assigned a role in dermatologic therapy.

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Clinical studies

My decision to test vitamin K in topical application was based on Belisario's report[7] on the use of podophyllin and Synkamin powder following cauterization of cancerous skin lesions. Since the materials he used appeared not to be available in this country, I asked a pharmacist to prepare ointments containing 2 per cent and 5 per cent concentrations of menadione in aquaphor. The first step in my informal clinical research project was to apply a test patch of 2 per cent menadione to my forearm. Two hours later there was an erythematous area around the patch, with burning and slight discomfort. At that time I removed the patch (Fig. 1) but did not attempt to cleanse the treated area completely. In 24 hours there was a solid type of vesicle containing viscous fluid (Fig. 2). The vesicle was accidentally ruptured after 8 days (Fig. 3); the resulting superficial ulcer was extremely slow in healing. After 7 months a slight pigmentation still remained, similar to that which has been noted to follow a controlled application of monobenzyl of hydroquinone (Benemid).[8]

That the patch-test reaction was not allergic was later confirmed by the results of topical applications in patients with skin lesions. Moreover, Belisario reported[9] similar results in a test in which he applied a patch to his forearm and left it in place for 6 hours. The reaction was positive, although no vesicle was evident. The next day there was a brown stain which was not removed by washing "When I rubbed it hard with an ether swab to try and remove the brown color," Belisario wrote, "the stained skin came off, leaving a raw surface."

The discoloration following menadione applica-

Fig. 1 Fig. 2 Fig. 3

Fig. 1. A positive patch test after 2 hours, using 2 per cent menadione in aquaphor. Fig. 2. The vesicle produced by 2 per cent menadione 24 hours after application, showing ridging but not distention from internal pressure. Fig. 3. The site of the patch test at the end of 8 days.

tion is similar in shade and texture to that seen after the application of silver nitrate or Anthralin to normal skin. A pad filled with 5 per cent menadione and placed in a window, unprotected from light and air, showed a slight rust color at the end of one month. The ointment is yellow when originally made up and remains yellow in a light-protected container after 6 months.

A patient with verruca vulgaris of the heel was selected for the first clinical test, since this lesion is a benign epithelial tumor that can readily be studied.[10] With collodion protection at the edges of the lesion, 5 per cent menadione in aquaphor was applied to the lesion and covered with tape for 24 hours. A new application was made each week for 4 weeks. The most striking change appeared in the area of marginal contact, which showed the silver-nitrate type of reaction. The pigmentation was darkest in the areas of greatest keratin, particularly in the nonverrucous tissue. The area of the lesion itself decreased in thickness, and after four applications there remained only mild erythema; there was no dark pigmentation or tattooing effect in this area.

A patient with verruca vulgaris of the hands was then treated with 2 per cent menadione in flexible collodion. The same darkening of the surrounding skin took place, being extended at points of contact where there was greater keratin (Figs. 4, 5, and 6). The patient was given a 15-cc. bottle of 2 per cent menadione in collodion so that nightly applications could be made. On the third night the patient fell asleep without bandaging her hand, which during the night came in contact with her knee. In the morning there were vesicles on the knee (Fig. 7), although the collodion covering the hand lesion was in no way disturbed. The affected areas on the knee were not discernible after 3 weeks.

A similar accident occurred when a patient with verruca acuminata of the penis was treated with 2 per cent menadione in collodion. Although the lesions were covered, the bandage became dislodged during the night, and vesicles appeared on the normal skin of the scrotum even though normal pubic hair was present (Fig. 8).

After a third such accident, the practice of having the patients apply their own treatment was discontinued. In this case, a man who had verruca vulgaris lesions on the dorsum of two toes, as well as four lesions of verruca plantaris, spilled the medication on the dorsum of his foot, "wiped it off," and went to bed. When he was seen 10 days later there was still mild erythema and slight scaling at the site of spillage. There was slight discoloration at the end of a month.

The results in these and similar cases which have been or are being treated with menadione may be summarized as follows: Verrucous lesions which were removed after varying periods of treatment with 2 per cent menadione in aquaphor, collodion, or glycerin were clinically markedly reduced in thickness. When the excised tissues were sectioned and stained with hematoxylin and eosin, however, the findings varied widely. In general, superficial verruca vulgaris lesions that provided a relatively large area of exposure to medication and that were not surrounded by dense keratin were more readily affected than deeper lesions such as plantar warts (Fig. 9). Plantar lesions which were in weight-bearing areas and had developed a relative halo of

Fig. 4. Verruca vulgaris showing the effect of 2 per cent menadione in flexible collodion; also pigmentation on normal keratin.

Fig. 5. Typical changes in verruca vulgaris at the end of 2 weeks of treatment with 2 per cent menadione in collodion. Note denuded area where contact with normal skin had caused vesiculation on the ring finger.

keratin or clavus-like protection were found to be reduced in depth when removed by curette. This reduction in mass of the wart was the only response to 2 months of weekly applications of 2 or 5 per cent menadione in aquaphor, collodion, or glycerin, even though callous tissue was removed before menadione was applied. The evidence, however, that menadione topically may inhibit the growth of certain benign tumors strongly suggests that studies should be made of the chemical nature and specific topical effects of the whole group of vitamin K substances, especially in relation to malignant conditions.

Fig. 6. Post-treatment photograph showing absence of scarring on hand treated for verruca (same patient as in Figs. 4 and 5).

Discussion

There is relatively little published information on the use or physiologic effect of vitamin K in topical application; most reports are concerned with studies of the hemopoietic system. Beckman[11] states that neither naturally occurring vitamin K nor the synthetic analogues have been observed to produce toxic reactions at therapeutic dosage levels. Pharmaceutical advertising has emphasized the usefulness of vitamin K therapy. It is not surprising, therefore, that physicians have tended to regard vitamin K as an innocuous drug which, in excessive amounts, would be excreted or disposed of without toxicity. On the other hand, Smith[5] has recently pointed out the danger of abuse of parenteral vitamin K, showing that it can actually induce the hypoprothrombinemia which it is supposed to prevent.

Clinically the action of menadione, one of the vitamin K group, is not unlike that of podophyllin, which is an antimitotic agent. The effectiveness of

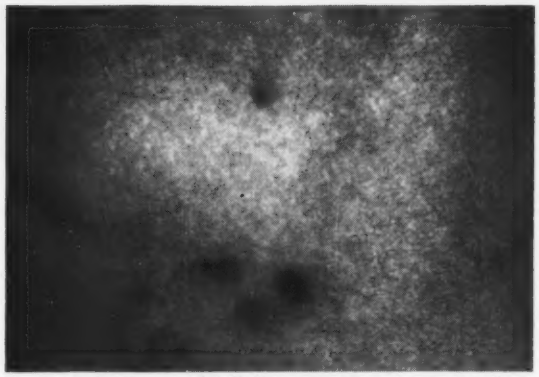

Fig. 7. Medial aspect of right knee where 2 per cent menadione in collodion had been in accidental contact with normal skin.

podophyllin in less than acute reaction dosage has recently been evaluated in the treatment of nevus verrucosus unilateralis.[12] In reactive topical dosage, podophyllin has been used in the treatment of plantar warts,[13] amyloidosis,[14] cutaneous carcinoma,[15, 16,17] and verruca acuminata.[18,19] The drug's action in all these conditions indicates an adverse effect on chromosomes. The effect of menadione also resembles that of colchicine,[20,21,22] which has long been known to affect chromosomes, as has urethane.[23] It would appear that chemical substances can affect chromosome chemistry,[24] and that several of the vitamin K group are in this class. Belisario[5] feels that Synkamin, one of this group, may be more effective than podophyllin, since it is less harmful to normal cells and more

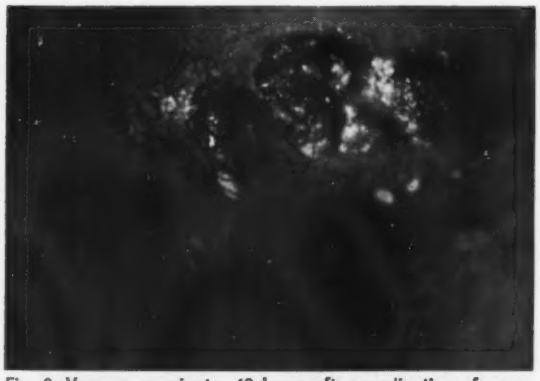

Fig. 8. Verruca acuminata, 48 hours after application of menadione in collodion, also showing reaction from contact with normal skin.

Fig. 9a

Fig. 9b

Fig. 9. (a) Verruca vulgaris before treatment with 2 per cent menadione in glycerin. (b) Site of lesion after treatment.

selective in its effect on tumor cells. Bellairs,[25] using chick embryos, concluded that Synkayvite (methadione diphosphate) is an antimitotic, but the effect was not consistent, nor was it entirely due to interference with cell division. The action of tetrahydroxyquinone, chemically closely related to vitamin K, has also been shown to be selective.[26] Here is an instance of fibrous tissue, in this case keloid, responding to the selective action which decreases the formation of fibroblasts by a chemical effect on the chromosomes.

A minor change influences the potencies of the vitamin K substances: When the chemical structure of 2-methyl-1:4 naphthoquinone has one hydrogen atom changed to an OH at 3 the substance becomes biologically inert.[27] If the ring is unattached at this point it is a potent form of vitamin K, therapeutically. The structures of some naphthoquinone derivatives, which have the ability to act like vitamin K,[28] are shown in Figure 10.

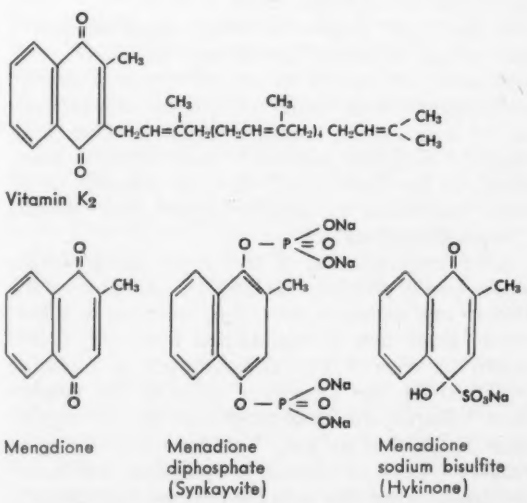

Fig. 10. Chemical structures of naphthoquinone derivatives.

The correlation between the effects of x-ray and those of vitamin K substances is rather striking. X-irradiation is known to affect chromosomes in some manner that causes mutation of chromosomes and eventual cellular death.[29] Mitchell and Simon-Reuss[30] in 1953 reported the enhancement of the effect of radiation by Synkayvite. They found that chromosome fragmentation occurred more often in treated tissue culture (chick fibroblast). In this instance the effect of Synkayvite itself did not exactly parallel the effect of x-ray therapy, but did potentiate chromosome fragmentation.

Summary

Although vitamin K has received little consideration as a topical therapeutic agent, preliminary clinical evidence now indicates that this substance and its analogues may exert a toxic influence on normal skin and also selectively affect tumor cells. In clinical tests, 2 per cent menadione produced vesiculation on normal skin and inhibited the growth of certain benign tumors. The results tend to confirm previous observations that some of the vitamin K-like substances can selectively change chromosomes chemically, an effect similar to that of x-irradiation. Basic research is needed with regard to chemical structure and physiologic effect of this group of substances, with extension of the work ultimately to clinical investigations of topical therapy in a variety of dermatologic conditions.

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Chorionic gonadotropin titers in normal and abnormal pregnancy

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Obstetricians are frequently faced with the problem of determining when to terminate the pregnancy in a case of eclampsia. How long is it safe to wait with the patient who exhibits the signs and symptoms of toxemia, before fetal death can be expected? In fulminating cases this is not too difficult to determine. The real problem is the moderately toxic patient who is a month or more before term. This is a great test of the obstetrician's art.

Another trial for the obstetrician is the patient who has pregnancy superimposed on pre-existing cardiovascular renal disease. Are the symptoms caused by the toxemia of pregnancy and hence of serious consequence to the fetus, or are they the result of the cardiovascular disease alone, perhaps influenced by the added burden of pregnancy, and not quite so dangerous to the fetus?

The following presentation describes a method of evaluating these problem patients by means of the serum gonadotropin titers.

It has been shown by many experimentors[1-6] that several abnormal conditions associated with pregnancy are related to an increase in chorionic gonadotropin titer. Such conditions are eclampsia,[1,2,4] hydramnios, isoimmunization,[3] molar pregnancy,[7-9] diabetes mellitus,[5,6] and multiple pregnancy. It has been noted that the placenta in all these conditions is usually larger than normal ("hyperplacentosis").

After implanatation of the ovum, gonadotropin production is profuse, reaching a peak between the fortieth and eightieth days, then tapering to a low, steady level that is maintained from the fourth month to term.[10] The gonadotropin is probably produced by the Langhans' cells of the trophoblast.[11] During a normal pregnancy the cytotrophoblast diminishes in size, but does not disappear entirely (Amoroso is cited by Jeffcoate and Scott[3] as having shown this with the electron microscope). It is hence presumably capable of reactivation.

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The exact cause of the reactivation of the cytotrophoblast has not been established. It may be the result of ischemia of the uterus resulting from overdistention due to twins or hydramnios.[1,7,12-14] In this case the response may be that of reaction to diffuse injury caused by uterine ischemia leading to hypoxia of the placenta. Or perhaps this reactivation is secondary to abnormal activity of the placenta itself.[7]

The placenta in a molar pregnancy is always larger than that of a normal gestation of similar duration, and the gonadotropin titers are higher.[15,16] As many as 10 of 30 women with moles develop eclampsia.[15] Toxemia does not occur in molar pregnancy until the fundus reaches the umbilicus or higher, and the eclampsia rarely will lead to convulsions.

In multiple pregnancy there is a greater chorionic mass than normal. Mitros,[14] in a review of 188 twin pregnancies, found 10 cases of eclampsia for a rate of 5.3 per cent, far higher than among normal pregnancies.

Smith and Smith[2] state that the abnormal rise in gonadotropin titer preceded clinical signs of eclampsia by some weeks.

Scott[7] states that in hydrops fetalis the ratio of the fetal-placental mass is greater than 0.4, is usually in the range of 0.7, and that this indicates hyperplasia of the placenta, not merely the edema that is also seen in the fetus. In Rh isoimmunization, Jeffcoate and Scott[3] have not seen eclampsia except in the presence of hydrops fetalis.

Method

This study was begun at Metropolitan Hospital in August 1959 and continued until March 1960. A 20-cc. sample of blood was collected from each patient who was admitted for treatment or delivery with any of the abnormalities discussed above. The blood was obtained no later than 24 hours after delivery. The blood was centrifuged immediately and the serum frozen at 0 to 4 F. (minus 7 C). The samples were saved in this frozen state until used for injection. Control specimens were obtained from clinic and private patients in the ninth month of gestation if all the signs and symptoms indicated a normal pregnancy.

For purposes of this study, toxemia was said to be present if two or more of the following conditions existed: blood pressure over 140/90, albuminuria greater than plus 2, edema, or convulsions.

Immature female rats weighing 35 to 50 grams were injected intraperitoneally with the following dilutions of each serum: 1:3, 1:10, 1:25, 1:33, 1:50, and 1:100. Two cases required higher dilutions. These dilutions gave the following concentrations of human chorionic gonadotropin in rat ovary hyperemia units: 330, 1,000, 2,500, 3,300, 5,000, 10,000, and higher. The smallest dose producing ovarian hyperemia in the immature rat was the measure of the chorionic gonadotropin content of the serum.

Approximately 15 hours after injection the rats were sacrificed with ether and the ovaries inspected. To be positive a true brick-red color had to be present in the ovaries. It is to be noted that the injections were given to duplicate paired rats for further confirmation of the end point of the titration.

Results

Ten control cases were used, and none showed a positive response of greater than 2,500 rat ovary hyperemia units (ROHU). Eight of the ten only showed 1,000 ROHU. All the control cases had normal uncomplicated deliveries.

The results in the abnormal cases are summarized in Table I. It is seen that 5 of the 10 cases showed abnormal elevation of the chorionic gonadotropin titer.

TABLE I—RESULTS OF CGT TESTING IN COMPLICATED PREGNANCIES

Case No.	Diagnosis	CGT (ROHU)	Comment
1	Anencephaly and polyhydramnios	3,300	Expected result
2	Twins	3,300	Expected result
3	Eclampsia	2,500	Not explainable
4	Cardiovascular disease plus pregnancy	330	Expected result
5	Eclampsia	10,000	Expected result
6	Rh isoimmunization	3,300	Expected (Rh titre positive 1:512 dil.)
7	Cardiovascular disease plus pregnancy	1,000	Expected result
8	Twins	3,300	Expected result
9	Severe diabetes	<330	Expected (fetus dead "several weeks")
10	Hydatidiform mole	33,000	Expected result

Discussion

It is interesting to note that some patients with the most severe complications do not show an increase in chorionic gonadotropin titer (CGT). Attempting to explain this may give a clue to the process acting in these patients. A detailed study of each abnormal case is somewhat revealing, especially whether the results are in keeping with known facts and hence expected, or whether they are abnormal and unexpected.

The patient in Case 1 had polyhydramnios, and the fetus was anencephalic. The mother had no symptoms of toxicity. The CGT was 3,300 ROHU, which in view of the proposed theories is an expected result.

In Case 2 the patient was gravida III para II, had a weight gain of 29 pounds, and had a blood pressure of 134/104. She complained of dizziness, scotomata, and headaches, and had plus 2 edema and plus 1 albuminuria. A repeat cesarean section

was performed for the delivery of twins. The CGT was 3,300 ROHU, an expected result.

A 19-year-old woman (Case 3), gravida I para 0, had a weight gain of 55 pounds, blood pressure of 170-190/130, plus 4 edema, and plus 3 albuminuria. She had convulsions, and a stillborn child was delivered. Her gonadotropin titer was 2,500 units. This is an unexpected result. It is questionable whether she was a victim of pre-existing cardiovascular disease; at present we are unable to explain this case.

In Case 4 the patient was 26 years old, gravida II para I, had gained 18 pounds, and had a blood pressure of 162/104. She had plus 3 edema, dizziness, headaches, and fainting. This patient's blood pressure had been elevated both before and after onset of pregnancy. Albuminuria was only plus 1. She was delivered of a normal child. Her gonadotropin titer was 330 ROHU; this is an expected result since she probably has cardiovascular disease.

A 21-year-old woman (Case 5), gravida I para 0, had a weight gain of 23 pounds, a blood pressure of 116/80, and plus 3 albuminuria. She was delivered of a normal child. She had been hospitalized before delivery for treatment of pre-eclampsia. Her gonadotropin titer was 10,000 ROHU; this is an expected result.

In Case 6, a 30-year-old woman, gravida IV para II, had a blood pressure of 120/80 and plus 1 edema. She had gained 37 pounds during pregnancy. She was Rh negative, and she delivered a stillborn macerated child. Her gonadotropin titer was 3,300 ROHU, and the Rh antibody titer was positive in greater than 512 dilutions. This is clearly a case of Rh isoimmunization, and the CGT is as expected.

In Case 7, the patient was a 28-year-old woman, gravida I para 0, who had been known to have hypertension since age 21. She had gained 40 pounds during pregnancy, and her blood pressure was 190/110. She had headaches, scotomata, edema, and albuminuria of plus 2 to 4. Her CGT was 1,000 ROHU; this is an expected result since she was a victim of cardiovascular disease prior to pregnancy.

In Case 8, the patient was gravida VIII para VI, had a blood pressure of 140/80, and had gained 27 pounds during pregnancy. She was delivered of twins, who are both living and well. Albuminuria was plus 2, and she had plus 1 edema of the hands, legs, and face. Her gonadotropin titer was 3,300 ROHU; this is an expected result.

A known diabetic (Case 9) had hypertension, edema, and albuminuria. She was delivered of a macerated stillborn child that had been dead for "several weeks." Her gonadotropin titer was less than 330 ROHU; this was an expected result, since the chorionic tissue probably was no longer functioning and the symptomatology was based on preexisting diabetes and cardiovascular disease.

A hydatidiform mole was delivered from the patient in Case 10, who was gravida II para I and had a blood pressure of 106/62. Her CGT was 33,000 ROHU. This is certainly an expected result.

Conclusions

On the basis of the admittedly small number of cases in this study, it is felt that eclampsia, multiple pregnancy, Rh isoimmunization, hydramnios, and molar pregnancy yield an increase over the normal level of chorionic gonadotropin as tested for by use of the immature female rat. It is further felt that cardiovascular disease occurring in conjunction with pregnancy will not give a rise in gonadotropin titer. There is need for much greater evaluation of this theory in hospitals throughout the country.

The recommended procedure is as follows: (1) The laboratory should establish the level of gonadotropin titer in normal pregnancy by many tests on normal patients at term. (2) All abnormal pregnancies of the nature discussed above should have tests for gonadotropin titer. (3) The results of all the abnormal pregnancies should be reviewed from the standpoint of fetal results and gonadotropin titer.

By means of the above system, it may be possible in the future to state that the fetus in the case of eclampsia, diabetes, or Rh isoimmunization is in severe danger of death at a given time, based on the rising titer of gonadotropin. This would be an indication for immediate termination of the pregnancy. By this means, the frequent waiting period in the eclampsia case, during which time the fetus dies, might be eliminated.

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Selected personality differences between placebo reactors and nonreactors*

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The problem of the effects of placebos is not new in medical practice. Several centuries ago most medications probably exerted more placebo effect than pharmacologic effect, although unrecognized as such. The first medical definition of the word "placebo" can be found in *Quincy's Lexicon*, published in 1787.[1] By 1811 the placebo was defined as "any medicine adapted more to please than to benefit the patient."[2] The twentieth century has shown a rise in the status of the placebo until today it is considered a valid form of psychopharmacologic therapy. The most recent studies of placebo therapy have been attempts to put it on a scientific basis.

Review of literature

The "placebo reactor" is a person exhibiting a reaction to the administration of a physiologically inert substance, such as distilled water or lactose. The "placebo nonreactor," in contrast, demonstrates neither a subjective nor objective reaction to a physiologically inert substance. Within the past decade the following statements have been made regarding placebo reactions:

1. Placebo effects, which modify the pharmacologic action of drugs or endow inert agents with a potency, are not imaginary but may be associated with measurable changes at the end organs.[3]
2. Placebo reactors are not "whiners," "nuisances," not typically male or female, young or old, and have the same average intelligence as the nonreactors.[4]
3. The placebo effect is fairly constant, suggesting that a fundamental mechanism is involved.[5]
4. There is a greater response to placebo therapy in people with great anxiety if the person who gives the placebo responds to the patient's reactions with greater sympathy.[6]
5. In many series of trials dealing with severe postoperative pain, cough, anginal pain, headache, seasickness, and the common cold, the placebo was found to have an effectiveness of approximately 40 per cent in all trials as compared with the standard medications—morphine, codeine, et cetera —which had an approximate effectiveness of 65 per cent.[6]
6. The effectiveness of placebos increases with increased stress.[7]
7. About half the effectiveness of morphine is due to its placebo effect.[8]

The placebo is now used under controlled conditions by the drug manufacturers in evaluating new drugs by the double-blind technic. In such double-blind tests the placebo reactor may be assumed to be present, and this to a certain degree affects the results of the drug being evaluated. Up to now there has been no way of screening out the placebo reactors. Lasagna has shown that the Rorschach test plus extensive interviews will not separate the placebo reactor from the nonreactor.[9] Moreover, these projective technics are not readily adaptable to statistical evaluation and are difficult to reproduce. Previous workers[1,9,10] have stated that the personality of the placebo reactor needs further investigation. If a distinguishing personality trait characteristic of placebo reactors could be determined it might be eliminated from experimental groups by virtue of personality tests, thereby increasing the efficiency of the experimental method.

Procedure

The purpose of this study was to determine whether differences exist between subjective placebo reactors, objective placebo reactors, and nonreactors

*Since completion of this study another paper has been published on the same topic: Knowles, J. B., and Lucas, C. J.: Experimental studies of placebo response. J. Mental Sc. 106:231-240, Jan. 1960.

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TABLE I—COMPARISONS OF SUBJECTIVE PLACEBO REACTORS, OBJECTIVE PLACEBO REACTORS, AND PLACEBO NONREACTORS (N=25)

	Minnesota Multiphasic Personality Inventory*									Bernreuter Personality Inventory†		
	A	B	C	D	E	F	G	H	I	1	2	3
Q=	1.0	4.0	4.0	5.0	3.4	4.0	1.5	2.0	4.0	4.0	7.0‡	7.0‡

*Legend: A, hypochondriasis; B, depression; C, hysteria; D, psychopathic; E, masculinity-femininity; F, paranoia; G, psychasthenia; H, schizophrenia; and I, manic.
†Legend: 1, dominance-submission; 2, introversion-extroversion; 3, neurotic tendency or personality stability.
‡Probabilities of <0.05.

as measured by the Minnesota Multiphasic Personality Inventory and selected items of the Bernreuter Inventory. Nicotinic acid, 200 mg. taken orally, usually produces a marked facial vasodilatation or flush. Twenty-five third-year medical students of the College of Osteopathic Physicians and Surgeons were subjected to a double-blind administration of nicotinic acid, 200 mg., and lactose powder—both compounds in identical capsules. Both objective and subjective data were collected. Objective data were determined by the use of the Dermalore, a thermo-couple apparatus. Changes in facial skin temperatures of each participant were measured within an hour following the administration of the substance. Subjective data were determined by means of a questionnaire which merely asked the subjects to list all sensations.

The Minnesota Multiphasic Personality Inventory and the Bernreuter Personality Inventory were then administered to the group who had received the placebo.

The data were analyzed by means of a nonparametric statistical method, the Cochran *Q*. No statistic was accepted as being significant unless the chance occurrence of such a statistic was 0.05 or less.

Results

The results of the Cochran *Q* for comparing unmatched pairs are presented in Table I.

The MMPI revealed no significant differences between the three groups—subjective reactors, objective reactors, and nonreactors. The dominance-submission scale of the Bernreuter Inventory did not distinguish between the groups; however, there was a significant difference in the number of "yes" responses to the neurotic tendency scale and the introversion-extroversion scale for the three groups. In both cases, the subjective placebo reactor group showed the highest percentage of "yes" answers.

Tyler[11] has stated that the Bernreuter Inventory could be used in an outpatient clinic, but not in a situation where the subject has reason to attempt to get a better score than he deserves.

Summary

The MMPI and the Bernreuter Personality Inventory were administered to three groups: subjective placebo reactors, objective placebo reactors, and placebo nonreactors. The individual scores of each personality factor were statistically analyzed in an attempt to determine whether differences between groups existed. On the basis of the analysis of the data for the population studied, the following conclusions appear justified:

1. A distinguishing personality trait characteristic of placebo reactors could not be determined by means of the MMPI.
2. There is a difference between placebo reactors and nonreactors in the neurotic tendency scale of the Bernreuter Inventory, the former being the more neurotic.
3. There is a difference between placebo reactors and nonreactors in the introversion-extroversion scale of the Bernreuter Inventory, the former being more extroverted. This factor in addition to the neurotic tendency scale makes the separation of placebo reactors and nonreactors a possibility.

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Understanding motivation for learning in medical school

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The primary purpose of any teacher, it has been said, is to stimulate. From the historical beginnings of education, the need to stimulate or motivate has been necessary for growth and existence. Whether the savage child was being taught to hide himself from some environmental threat or to use a tool for hunting, the basis for this motivation was a need (in this instance for survival) which was implemented through fear. From that time until the present, variations in motivation for learning have ranged from the teacher under the village tree, such as Socrates, who "motivated" by satisfying a "thirst" for knowledge, to the use of fear or threat of punishment to promote learning, which characterized education in the middle ages.

The purpose of this paper is to attempt to answer the question: Can a teacher in medical school recognize in his students motivational factors that are common to all in the group as well as those that are unique to each and, with this understanding, manipulate these factors so as to provide a more effective learning experience?

This study will not attempt an exhaustive survey of the problem of motivation, but rather will attempt an understanding of those factors that might be considered similar in all students with the same general goal, and those factors that are unique to the individual. It should become immediately apparent to the teacher of future physicians that in spite of the fact that they all have the same broad goal—to become a physician—that that goal may vary considerably from student to student. It should become equally apparent that the teacher cannot possibly ascribe any or all motivating factors to all of his students all of the time. Indeed, the teacher is caught between the oversimplification of considering all motivating factors as being equal in all his students, to the other end of the spectrum, that of seeing complete uniqueness in all individuals and therefore believing that any approach other than an individual motivational attempt is bound to meet with frustration. It is hoped that this paper may present a moderate view between these extremes, and that from the present study may be developed a theoretic model which can be used by the faculty member as a guide to better understanding of students' motivation. This should make possible more effective manipulation of the motivational factors of individual students and thus a more effective learning process. That motivation of each student is important will not be questioned; and that each student will have motivational factors to some degree unique to him will also not be questioned.

At first observation it becomes apparent that one who has qualified for admission to and matriculated in medical school has already been motivated toward becoming a doctor. To what degree this motivational tension will dominate by satisfaction of immediate goals for this long-range goal is a moot question. To what degree this basic motivation can be manipulated toward the most effective learning is dependent upon many variables, not the least of which is the teacher as an individual and the methods employed by him in the total learning experience. Indeed, before proceeding further with the problem of attempting to manipulate student motivational attitudes, one must ask where the investigation should begin—with the student or the professor?

Motivation has been defined[1] as "the process of arousing and sustaining behavior or of changing the pattern of an activity in progress." McDonald[2] says that "motivation is an energy change within the person characterized by affective arousal and anticipatory goal reactions." Deese[3] states that

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The primary purpose of any teacher, it has been said, is to stimulate. From the historical beginnings of education, the need to stimulate or motivate has been necessary for growth and existence. Variations in motivation have ranged from satisfying a "thirst" for knowledge, to the use of fear or threat of punishment

motives provide the internal impetus behind behavior (needs or drives) and the direction this behavior takes (goals). Learning, he adds, provides the means by which the organism is able to reduce or eliminate need by contacting an appropriate goal. Motivation is therefore a construct, an invented idea to describe the impetus that makes animals active. In general it can be said that most psychologists utilize the construct of internal tension or drive that is reduced by moving toward his goal, typified by Murray in what he calls "press."[4] He conceives the individual as being set into action by a complex set of motives. When a need is aroused in the individual he is in a state of tension, and satisfaction of the need involves reduction of the tension. In equating the formula "tension→ reduction of tension" to the metabolic cycle, he states it to be representative of the catabolic side only. He therefore submits a formula he believes to be more inclusive: "generation of tension →reduction of tension." The formula now represents a temporal pattern of states rather than an end state, but it applies only to positive needs, as he believes the reduction-of-tension formula to adequately cover withdrawals, avoidances, defenses, and preventions.[4]

Kelly,[5] on the other hand, provides an outright repudiation of the notion of motivation. He believes rather in a psychology of personal constructs, or a psychologist's system for construing persons who themselves construe in all kinds of other ways. In other words, the validity of the construct depends upon its "prophetic" effectiveness, and not upon any claim to external origin, either divine or natural. Studies by Kelly[5] of students referred by teachers with complaints about the students' motivation led him to state that he learned much more about the complainants than he did about their students. By applying this understanding he was able to use the teacher's complaint as a starting point for reorienting the teacher, and more often than not the student's problem was also satisfied.

What common factors can be assumed in each student in the group as the professor stands before his class? One has been mentioned already: Each student has evidenced by his very presence in the class a motivation in the direction of becoming a physician. This fact alone demonstrates considerable effort, on the part of each student, that represents attempted satisfaction of some drive or need.

With the notable exception of common language and sexual variability, a second categorization can be made on cultural and sociologic similarities or dissimilarities. If it should be that all members of the group are known to have been life-long residents of a given community of similar family and religious backgrounds, the cultural and sociologic variable is reduced. If, on the other hand, the geographic origins of the group include not only a general coverage of the United States but several other countries as well, the variables are immediately compounded. Nonetheless, if this information is taken note of, the resulting categories would still be a manageable group.

A simple pattern of basic, dynamic motivational direction common to all people based on satisfaction of needs by the individual, each dependent upon prolonged satisfaction of the preceding, is as follows:

1. Satisfaction of basic needs, such as hunger and sex
2. Satisfaction of less basic needs—the attaining and planning for food, shelter, et cetera, that go beyond the bare essentials for existence
3. Self-realization or identification
4. Status satisfaction—motivation that is measured by status consistent with the role of the individual as he is or conceives himself to be
5. Self-actualization—which according to Rogers[6] results from self-acceptance eventuating in the mature individual.

Murray[7] adds a sixth point, which he believes is peculiar to "our way of life." This is the ambition or need for ascensionism, or the need for achievement, and a relatively much stronger need for awed attention, spectacular glory, and sensational prestige, linked or not with a component of sexuality. In other words, "to ascend vertically, in a physical, social, or intellectual sense." It is this ambition to ascend, he continues, that once was religious and zealous but now is secular and zealous, which accounts for the restlessness of the American way of life.

It is to be noted that these rewards are extrinsically rewarding and not intrinsically satisfying.

Admission to medical school is contingent upon several factors, varying from strict actuarial matters to more or less subjective interviews. In certain instances requirements are of a provincial nature, as outlined by the state or a religiously owned school. These factors all tend to provide a group more uniform straight away, and the factor of intelligence, though varying in degree, will, like other factors, tend to be in a range that allows another category here for development of a model.

More extensive understanding of intelligence was offered in the O.S.S. study[8] made during World War II in which evolved the concept of "effective intelligence." It is pointed out that intelligence is more than the speed and accuracy of the mental processes involved in responding to a specified, standard paper-and-pencil test, as represented in the I.Q. measurement, but must also include the effectiveness of the whole system of mental operations. In this study, interest focused on the mental abilities called into play in performing various roles. "Effective intelligence" was therefore the intelligence that fitted the subsequent role of the candidate for the O.S.S.

Hahn and MacLean[9] deny the existence of "intelligence," but believe there are "intelligences," and quote one authority (who refuses to permit quotation, but is one who has spent years in the measurement of academic ability) in stating that intelligence measurement shifts had begun before World War II. He said that the assignment of levels of ability by performance in high school and colleges in general have little meaning because of the very large variation in institutions. Thus while a pupil may graduate (perhaps with honors) from one high school, he would fail miserably in another; and where it might take the college age equivalent of an I.Q. of 125+ to achieve a master's degree in one university, it might be only an I.Q. of 100+ in another.

His assumption appears to be substantiated by the Carnegie (Pennsylvania) and other studies. For so-called first-class institutions this same authority finds the following mean I.Q. equivalents are necessary:

High school graduation	110
Liberal arts college freshmen	120
B.A. or B.S. degree	125
M.A. or M.S. degree	130
Ph.D. degree	135

To deal with a student group possessing common cultural and economic origins and other commonly shared environmental aspects would simplify our concern for common motivating factors. Such a potential ideal, however, lacks the reality of what one is likely to encounter. Student origins vary to such an extreme degree that a completely different consideration of motivational factors herein becomes evident. Add to this the variation in background of those from the same city of the United States and their own cultural origins and those from other countries of the world, and the common denominators becomes less distinct.

What then can be conceived as common factors in such a cross section of the world from a sociologic point of view? First, we can consider that even in such a varied group we can at least categorize a minimal number of the group according to area, city, country, or culture of origin. Where geography of origin has produced the ability to communicate in a common and mutually understandable manner, another category has been created. Problems immediately arise where a teacher is oblivious to this language variation (by lack of information or of concern), and unless special effort is made to insure communication, the learning process is bound to be impaired.

What common factors can be assumed in each student? Each has evidenced by his very presence in the class a motivation in the direction of becoming a physician. This fact alone demonstrates considerable effort, on the part of each student, that represents attempted satisfaction of some drive or need

A second category may be economic, and this may cut across other sociologic aspects and bring together some in the group but separate others of otherwise similar categories. For groups with common religious or philosophic origins, one can have a reasonably trustworthy expectancy for these as group factors, as well as individual factors that will be touched upon later.

Grouping people together has great usefulness, but must not be done without careful analysis of our own motives and methods in grouping. Allport[10] warns that, in categorizing groups, an overgeneralized belief joined with an attitude of favor or disfavor is a prejudice, is therefore erroneous, and as such cannot be relied upon for categories with trustworthy expectancy or predictability. He adds, however, that the human mind must think with the aid of categories (which he equates with generalizations) and that, once formed, the categories are the basis for normal prejudgment. In education we can use to great advantage referent categories that have been formed with the best evidence available, and can thereby have trustworthy expectancies, rather than poorly formed categories based on inadequate evidence. Inadequate categories can damage rather than promote the goal we have set in our education endeavor. In the same way as "traits" are used to describe individuals, Cattell[11] refers to group "syntality," the specific objective description of groups. The study of the sociocultural matrix that led to the description of the "syntality" of the various groups was interpreted to have influenced the individual personality.

From the foregoing comments then we should be able to create three major referent categories into which we can place the students of a class: a philo-

sophic category, a category of value systems, and a category according to interests.

As Riesman[12] describes in *The Lonely Crowd*, the student in the classroom today is of the "other-directed" generation, having been taught by young college graduates who themselves have been taught to be more concerned with the student's social and psychologic adjustment than his academic progress. Simple mathematical calculation tells us also that these "other-directed" students of today that find themselves in medical school are more likely than not being taught by professors either of the "inner-directed" generation or of the transition period between the two. Only a bit more calculation is necessary to perceive the possible conflict that results from misunderstanding between the teacher and the taught concerning basic philosophic educational assumptions.

A difference in individual philosophic motivational dynamics can be illustrated by referring to certain religious practices. In certain religious cultures, to give to the poor constitutes a "credit" in heaven for the giver, and consequently the less fortunate are willing to help create this "credit" by asking alms of those who possess more than they. Contrast this attitude with that of a particular religious sect in America which believes it a sin to ask or receive help from anyone except under the most extreme circumstances, and then only from those of the same religious sect.

Our category of systems of values clearly helps us to see how two individuals both with the same general goal of becoming a physician can be motivated by greatly varying systems of values. To the "St. Francis of Assisi," service to man is the only motivational factor of value. Another man may be motivated in an economic direction; yet in this period of history, status-seeking may be common to both. Status in one instance relates to observation by others, contrasted with the status that is dependent upon recognition of traits such as intellectual attainment, ability to serve others, and sincerity of purpose. A "trait," according to Allport,[13] is the major motivational construct, being defined as a determining tendency or a predisposition to respond. Referring to Spranger's types of men, Allport, Vernon, and Lindzey[14] characterize the economic man as being interested in that which is useful and practical. This, they feel, was originally based upon the satisfaction of bodily needs; he therefore wants education to be practical and regards unapplied knowledge as wasteful. When this economic attitude conflicts with other values, he may confuse luxury with beauty, and may in his relations with other people be more likely to be interested in surpassing them in wealth than in dominating them (political attitude) or in serving them (social attitude). They also quote Spranger as saying that the political man is primarily interested in power, and certainly that may manifest itself in the physician as seeking power over others in a life-and-death situation.

Human beings are the only animal whose sole primary "instinct" is the instinct to learn, and in all aspects of learning the emotional tone of the person is important. The best learning accomplishment is in part the result of joy in the activity

The question now arises as to how effectively we can influence these value systems. Rogers[6] tells us that values are developed by the individual's experiences, in some instances from those introjected or taken over from others, but preceived in a distorted fashion, as if they had been experienced directly. Then as the individual perceives and accepts into his self-structure more and more of his organic experiences, he finds his value system, largely formed by introjections distortedly symbolized, being replaced by a continuing valuing process.

The study of Jacobs,[15] however, shook the commonly accepted notion that college altered the values of its students. He summarized the study as follows:

> This study has discovered no specific curricular pattern of general education, no model syllabus for a basic social science course, no pedigree of instructor and no wizardry of instructional method which should be patented for its impact on the values of students. Student values do change to some extent in college. With some students, the change is substantial. But the impetus to change does not come primarily from the formal educational process. Potency to affect student values is found in the distinctive climate of a few institutions, the individual and personal magnetism of a sensitive teacher with strong value-commitments of his own, or value-laden personal experiences of students imaginatively integrated with their intellectual development.

From these two points of view we may conclude that when experiences in medical school provide for individual maturing, we can expect (according to Rogers[6]) values to change toward greater self-acceptance and acceptance of others. On the other hand, when these experiences are lacking or otherwise ineffectual, we are faced with accepting these values as they are and providing learning experiences within the existing framework.

Individual interests have been studied by many people. The best known psychologic test of this nature has been that by E. K. Strong, Jr., where a measure of the individual's vocational interests (not necessarily aptitude for) are determined from 400 items checked according to like, dislike, and indifference. Nonvocational interests and values are measured by the Kuder Preference Record, as well as the Allport-Vernon-Lindzey Scale of Values

mentioned above.[1] Information available from these tests offers considerable help in offering a positive direction for motivational manipulative effort that otherwise might prove fruitless endeavor for the teacher.

One of the most important aspects of this entire study concerns the emotional state or attitudinal set and its use as a motivational tool to influence the total learning experience. From Riesman's generation of the inner-directed man, many of the philosophic attributes of medieval classical philosophy and Calvinistic thinking evidence themselves in the teacher. If he has the classical educational philosophic assumption that the learning process comes from within, and if the student does not learn, it is assumed that he is lacking in the moral fiber necessary to do so, and it therefore becomes the duty of the teacher to "bring out" behavior that evidences learning. Having been exposed to organized material, he now is expected to achieve.

Teachers often use strongly worded and emotional appeals in an effort to promote learning. It is apparently assumed that this method should be effective in changing the behavior of the student. Others, not so inclined, challenge this approach. What then is the evidence that we can investigate in an attempt to satisfy this problem?

Deese[3] tells us that fear can serve as a drive, as a motivation for instrumental activity, and that reduction or elimination of this fear can serve as reinforcement. He states that there can be little doubt that classical conditioned responses, such as galvanic skin responses or skeletal reflexes such as the eye blink, occur more readily in the highly anxious individual. However, there was no tendency for individuals studied with the Manifest Anxiety Scale and found to be high on that scale, to blink more frequently, even when under conditions of tension. Deese[3] and others[2] have shown that in studies of more complicated instrumental acts, high anxiety is associated with poor performance, and that a strong emotional appeal based on arousal of fear is not so effective as a minimal emotional appeal. Fear, as the word is used here, refers to a specific and known dread, while anxiety refers to a diffuse dread, the cause of which may often not be ascertainable.

The role of punishment may have a different meaning at this academic level, but whether a teacher raps the knuckles of the child for undesirable behavior (as interpreted by the teacher) or punishes behavior by the use of threatening examination or threats of failure, the end result is a painful stimulation, or the threat of such stimulation is made contingent upon it.[3] It is the way in which the act of the teacher is perceived by the student that determines whether punishment is or is not taking place. Implicit as well as explicit statements may therefore constitute punishment not intended as such. Certainly intended threats may go unheeded because of the manner in which they were perceived.

Giles[16] reminds us that human beings are the only animal whose sole primary "instinct" is the instinct to learn, and that in all aspects of learning the emotional tone of the person is important. The best learning accomplishment is in part the result of joy in the activity. Poor learning is quite generally found to result after discouragement, such as a prediction of failure.

The use of punishment may weaken a particular behavior pattern momentarily, but it does nothing to eliminate the undesired behavior permanently. Its use would therefore seem to be greatly limited. However, it is suggested that the temporary response inhibition may be useful to teach new methods of reaching the same goal[3] and there has been experimental evidence to support this (Whiting and Mowrer, 1943[17]).

Conclusion

Let us again ask the question we asked at the outset of this paper: Can a teacher in medical school recognize in his students motivational factors that are common to all in the group, as well as those that are unique to each and, with this understanding, manipulate these factors so as to provide a more effective learning experience?

As a guide to support an affirmative answer to this question, the following theoretical model is proposed:

I. Common motivational factors
   a. Basic graduated pattern from satisfaction of basic needs, self-realization, status, self-actualization, and "ascensionism"
   b. Toward becoming a physician
   c. Qualifications for matriculation
   d. Male or female
   e. Common language
   f. Similar range of intelligence level

II. Categories with less generalization
   a. Sociologic
   b. Cultural
   c. Religious
   d. Geographic origin
   e. Economic

III. Factors unique to the individual
   a. Philosophy

The use of punishment may weaken a particular behavior pattern momentarily, but it does nothing to eliminate the undesired behavior permanently. However, temporary response inhibition may be useful to teach new methods of reaching the same goal

1. Religiousness
2. Theoretical views
3. Esthetics

b. System of values
1. Service
2. Economic purposes
3. Status
4. Power (political, of Spranger[14])

IV. Teacher attributes and attitudes
a. Interpersonal relationships
b. Ability to communicate
c. Knowledge of subject
d. Knowledge of and ability to use teaching methods and tools
e. Knowledge of and motivation to apply above factors in regard to students.

Two comments can be made concerning this model: First, there is no claim of limitation of consideration of this paper to medical education; most if not all of the factors discussed can apply in other areas. Second, none of these categories is expected to be found in a "pure" state, and any listing of factors is done so as an "ideal" situation. The conclusion therefore can be made, and a generalization stated, that by understanding the common as well as the unique motivational factors in his student, a teacher can more effectively enhance the learning process.

Summary

A general understanding of the dynamics of motivation, with special reference to medical education, has been presented. There has been an attempt to group common and unique factors of motivation for the purpose of answering the question as to whether, by knowing that these factors exist, the teacher can manipulate them to enhance the learning process.

The use of the Strong Vocational Interest, the Kuder Preference Record, and the Allport-Vernon-Lindzey Scale of Values tests has been briefly alluded to as to their importance in understanding motivation of students.

A theoretic model has been proposed to serve as a guide and to support the answer in the affirmative.

The discussion began, as it must end, with another question: In an attempt to understand student motivation, in order to promote the greatest learning experience, one must ask where the investigation should begin, with the student or the professor? Should it be both?

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EDITORIALS

THE JOURNAL OF THE AMERICAN OSTEOPATHIC ASSOCIATION

This periodical is the official publication of the American Osteopathic Association.

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A report to the membership

TRUE B. EVELETH, D.O., Executive Director, American Osteopathic Association

Throughout its 64 years of becoming established as a school of the healing art, organized osteopathy has met and successfully answered many challenges. Each such challenge, while differing in detail, was designed to put or keep the profession wherever the challenger considered was its proper place. No single incident seriously damaged osteopathy, although the constancy of the oppression has been burdensome and has produced some of the problems which the profession continues to face.

Organized medicine has never really relinquished its early role as the principal oppressor, although at times it has received assistance from sources with less direct interests. In terms of public respect, organized medicine is paying dearly for its invasions into and pronouncements regarding nonmedical affairs. Having failed to prove its contention that osteopathy is cultist healing, organized medicine's continued assault of the osteopathic profession is both unbecoming and ineffective.

It has often been said that no outside agency could destroy osteopathy as a movement in medicine, although it is acknowledged that forces from within the profession might do so. At the moment, the osteopathic profession as a whole is being challenged by a combination of these forces, medical and osteopathic, working together in the State of California. Success of the stratagem would mean that osteopathy would not continue to be a problem to the California Medical Association, and organized medicine would acquire without cost a complete medical school and many fine hospitals. California D.O.'s would be granted M.D. degrees by an osteopathic college with a new nonosteopathic name, and the college would no longer grant the D.O. degree. Thus the D.O.'s would help the outside force to weaken and undermine their own profession.

For many years there have been rumors and reports that many D.O.'s in California wished to become a part of the medical profession. As far as could be determined, no great headway toward that end was being made, but the persistence of the rumors boded no good. Over the years, and with more frequency and greater emphasis in recent years, D.O.'s in California have made pronouncements that the future of the osteopathic profession was dark and that public funds needed for professional education could not be obtained until osteopathic schools granted the M.D. degree.

Although these ideas have never been accepted at the national level, efforts to bring about friendlier relations between organized osteopathy and organized medicine have been in progress for a number of years. A brief summary of events will be helpful in evaluating present developments in California.

Since 1952, conference committees of the A.O.A. and the A.M.A. have met and discussed areas of mutual interest and concern affecting the health care of the public. Among the topics discussed have been the provision of better health care under prepaid medical care plans, the removal of the A.M.A.-imposed cultist designation of D.O.'s, the elimination of fake cancer cures, the opening of public-supported hospitals to members of the osteopathic profession, making available to osteopathic

physicians university-supported postgraduate education, and other public health problems.

To govern the meetings held between A.O.A. representatives and A.M.A. representatives, and representatives of other agencies of the healing arts as well, the A.O.A. House of Delegates in July 1952 adopted a statement of policy. An excerpt from that statement carries its essence in one paragraph, as follows:

> Firm in the conviction that original and important contributions to health care have been made by osteopathic physicians and surgeons, and equally firm in the belief that the osteopathic profession can best develop those contributions for the welfare of humanity, the American Osteopathic Association reaffirms, in the strongest terms possible, its policy of maintaining a separate, complete and distinctive school of medicine. This reaffirmation is founded in the belief that only as a separate and distinct school of the healing arts can the osteopathic profession fulfill its duty to the public.

Reiteration of this policy statement was made in July 1953. At that time divisional societies were urged to seek conferences with local medical societies to discuss local health matters in the public interest. Amalgamation, however, was not considered to be a subject for discussion in the interest of either the public or the profession.

In 1954, with A.O.A. approval, visitations to five osteopathic colleges were made by a group of medical educators under the auspices of the A.M.A. Committee for the Study of Relations Between Osteopathy and Medicine, more often referred to as the "Cline Committee." This Committee reported favorably on osteopathic education to the A.M.A. House in June 1955, and its first recommendation read: "That the House of Delegates declare that current education in colleges of osteopathy does not constitute the teaching of 'cultist' healing." However, on the floor of the House, the majority report of the House reference committee on the matter was replaced by the minority report, the adoption of which rejected the recommendations of the A.M.A. Committee and dismissed it. The A.O.A. maintained its Conference Committee in order to discuss matters of public health with any group whenever such cooperation could be expected to lead to improved health service to the public. (For a detailed report of the A.O.A.—A.M.A. conferences, see editorials in THE FORUM OF OSTEOPATHY for September 1953, September 1954, and October 1955.)

At the December 1958 meeting of the A.M.A. House of Delegates, in considering a resolution from the Indiana delegation calling for resolution of interprofessional problems at the state level, an A.M.A. House reference committee held that state action was not appropriate and the whole question was referred to the Judicial Council of the A.M.A. for study and report at the June 1959 meeting of the A.M.A. House. At that meeting the Judicial Council recommended:

> (3) It shall not be considered contrary to the Principles of Medical Ethics for members of the American Medical Association to teach students of osteopathic medicine who seek to develop and improve their knowledge of the science of medicine and thereby to improve their ability to provide a better quality of medical care.

The recommendation was amended in reference committee and on the floor of the A.M.A. House of Delegates by California delegates and the following was adopted:

> (C) It shall not be considered contrary to the Principles of Medical Ethics for doctors of medicine to teach students in an osteopathic college which is in the process of being converted into an approved medical school under the supervision of the A.M.A. Council on Medical Education and Hospitals.

Also at the June 1959 meeting a liaison committee was directed to be appointed from the A.M.A. to confer with a like committee of the A.O.A. It was reported, however, by M.D.'s from California that action at the national level was unnecessary, that California D.O.'s wanted to become M.D.'s, and that discussions to that end were under way between the two professions in that state. It was also reported that California M.D.'s were going to take over the osteopathic college at Los Angeles and cut osteopathy off at its roots.

At the A.O.A. House of Delegates in July 1959, these rumors and reports were brought out into the open and the California Osteopathic Association was, in effect, asked if they were really in the process of negotiating a merger with the California Medical Association and if they were negotiating to convert the school into a medical school under the jurisdiction of the Council on Medical Education and Hospitals of the A.M.A.

No denial of the amalgamation rumors was made, and the A.O.A. House, by an overwhelming majority, adopted a resolution presented by the Michigan delegation which read:

> That the osteopathic school of medicine, in the interest of providing the best possible health care to the public, shall maintain its status as a separate and complete school of medicine, cooperating with all other agencies and groups that sincerely promote the same objective when that cooperation is on an equal basis granting full recognition to the autonomy and contribution of the osteopathic school of medicine.

In January 1960 the A.O.A. Board of Trustees received assurance from a supposedly authentic source that no negotiations were being carried on between C.O.A. and C.M.A. However, in April 1960, at the annual meeting of its House of Delegates, the California Osteopathic Association passed a motion, without a dissenting vote, to *continue* to negotiate with the California Medical Association for merger of the two professions in California.

In May 1960, following the C.O.A. House action, an official invitation was issued by the A.O.A. to the president and other members of the California Osteopathic Association to meet with it to discuss the matter. When the invitation was not accepted, the President of the A.O.A. offered to go to Cali-

fornia for a conference. This offer was not accepted. The Executive Committee of the A.O.A. then proposed a meeting in Los Angeles to confer with officials of the C.O.A. Again the offer was refused on the ground that the C.O.A. officials saw no urgency for such a meeting and that a full discussion could be had in the A.O.A. House in July 1960. However, the Executive Committee notified the officers of the C.O.A. that it was coming to Los Angeles despite the refusal, hoping that a conference might still be arranged. On arrival, on May 24, 1960 the Executive Committee again contacted the officers of the C.O.A., urging a conference, and once again met with a refusal. The Executive Committee, while in Los Angeles, had an opportunity to discuss matters with several A.O.A. members who were also members of C.O.A. but held no official position in the state organization.

Information obtained was to the effect that most California D.O.'s did not keep themselves informed about, nor were they concerned with, organizational aspects of their profession, but left to a small group of leaders the organizational affairs of the more than 2,000 osteopathic physicians and surgeons. The majority of D.O.'s, it was said, were preoccupied with their busy practices and were complacent about organizational affairs.

After its discussions in Los Angeles, the A.O.A. Executive Committee decided that the President should call a special meeting of the Board of Trustees so that it might prepare a report to the House of Delegates. Such a meeting was held in the Central Office in June 1960. Again the officers of the C.O.A. were invited and urged to attend, and again they declined. They said they would be glad to meet with the A.O.A. Board at its annual meeting in July 1960 but saw no reason to meet prior to that time.

At the June special meeting, the Board adopted certain resolutions and directed that they be referred to the House of Delegates in July with a recommendation for adoption. The resolutions read:

1. That any divisional society which is in process of negotiations leading to unification and/or amalgamation or merger, or a process of a similar nature, of the osteopathic profession with or into any other organized profession involved in health care, shall cease such negotiations or be subject to the revocation of its charter by the A.O.A.
2. That no divisional society enter into discussion or negotiations with any agency in which the subject for discussion is unification and/or amalgamation of the osteopathic profession into any other organized profession involved in health care.

In an executive session of the 1960 A.O.A. House of Delegates, the California delegation presented its reasons for negotiating with C.M.A., after which the House adopted the resolutions quoted above, and a further one reaffirming "its policy of cooperation and coexistence with all agencies interested in the improvement of the public health."

Thereafter, a special meeting of the House of Delegates of the C.O.A. was announced for November 13, 1960, to determine whether negotiations for merger should *continue* as directed by the C.O.A. House of Delegates in April 1960 or whether it should cease negotiations as directed by the A.O.A. House in July 1960. In anticipation of the November meeting, the Executive Committee of the A.O.A. met in Chicago on October 1. During that meeting, Dr. Dorothy Marsh, president of the C.O.A., was contacted and requested to approve a visitation by Dr. Harvey, A.O.A. President, and Dr. Eveleth, Executive Director, to the district meetings of the C.O.A. being held prior to the special meeting of the C.O.A. House in order that the A.O.A. might have an opportunity to state its position to its members in California.

This visitation was not approved, but Dr. Harvey and Dr. Eveleth were invited to meet with members of the Executive Committee of the C.O.A. on October 16. At this meeting, in discussion of the proposed visits to the district societies, Dr. Marsh suggested that if the A.O.A. representatives would disclose to the members of the Executive Committee of the C.O.A. what they wanted to say in the district meetings, these members or their representatives could transmit the information in their visits to the district societies. The A.O.A. officials, instead, decided to send to A.O.A. members in California informational bulletins aimed at presenting data which they should have before taking action at the district level.

At the October 16 conference, the California Association officials gave assurance that no agreements had been reached and that they had ceased negotiations with the C.M.A. because of the A.O.A. House edict of July 1960. Information from other sources, however, was to the effect that there was a sort of "unilateral" form of communication or negotiations inasmuch as the C.M.A. had no restrictions placed upon it. That this was true was evidenced at the special session of the C.O.A. on November 13, since prior to the voting the delegates heard a recently received proposal or framework for merger submitted by the California Medical Association. It also heard a statement by Dr. Harvey, President of the A.O.A.

The C.M.A. report proposed that the C.O.A. make arrangements with the College of Osteopathic Physicians and Surgeons for the issuance of M.D. degrees to its graduates, and to other osteopathic physicians in California upon completion of a refresher course. It was proposed that the College would change its name, eliminating the word "osteopathic," and would cease issuing D.O. degrees, as soon as practical. Many other conditions were set forth but none assured the converts of membership in anything except a new component medical society which they themselves would establish. The newly designated M.D.'s could apply to the Board of Medical Examiners (over which the C.M.A. stated it had no control) for examination for license to practice under the new M.D. degree. It would, of course, be some time before the A.M.A. Council on Medical Education and Hospitals could approve the College as a medical school. No com-

ment was presented regarding the acceptability of the M.D. degree issued before such approval.

The vote of the C.O.A. House on November 13 was 66 to 40 to *continue* negotiations for merger.

Following the action of the C.O.A. House, which was in direct violation of the established policy of the A.O.A. House, a special meeting of the Board of Trustees of the A.O.A. was called for November 20, 1960, and at this meeting the charter of the California Osteopathic Association was revoked by a vote of 18 to 1. This action was deemed necessary in order to permit the formation of an osteopathic association in California which would work to continue the osteopathic profession and its hospitals and college in California.

The action of the A.O.A. Board in removing the charter of the C.O.A. provided an alternative for the D.O.'s who did not want to secede and assured the Board of Trustees of the College of the backing and continuance of the osteopathic profession in California.

The A.O.A. Board of Trustees was reluctant to take such drastic action but felt compelled to act in the best interests of the many D.O.'s in California and elsewhere who wish to preserve the profession.

This chronological resume has reported actions, but it provides the reader with little if any understanding as to why the C.O.A. undertook negotiations with the C.M.A. The answer given by C.O.A. representatives to questioners is that the "protective custody" of organized medicine is needed.

In support of the contention that medical "protective custody" is needed, certain D.O.'s in California claim that osteopathy in that state is done, is all through, is dead; that osteopathic education cannot receive adequate financial support as long as the colleges grant the D.O. degree; that osteopathic physicians and surgeons are to be cut off from participation in health insurance programs and, since practically everybody will be covered by one medical care plan or another, the D.O. will have no patients.

It is further contended that the A.O.A. is weak, backward, and desirous of maintaining the cultist appellation for members of the profession; that it protests inclusion in federal health programs; that it is operating "in the red" and is in no position to oppose the negotiations underway in California.

It is reported that indignation runs high in California because the C.O.A. feels it has been singled out for so-called abuse and punishment because of its negotiations for amalgamation with organized medicine in California when several other state organizations are reported to be carrying on similar negotiations. Emphatic official denials have been issued by each state so charged.

Most of the above recited contentions are so far-fetched as to be ludicrous if their results were not so serious. They justify enumeration only to indicate how members of the profession have been led, or misled, into harmful decisions. One is reminded of a movement in Europe 3 decades ago which was built on erroneous assumptions and false statements, endlessly repeated until they were believed by their proponents to have validity. History records the tragic consequences of that snare of false premises and errors and misguided actions—consequences which will pose world problems for decades to come.

But let us look at the positive side of the profession's present position. Following the adoption by the A.O.A. House of Delegates in July 1959 of the statement of policy indicating a determination to continue the osteopathic school of practice, thus dispelling the confusion in the minds of influential segments of the public who are interested in the profession and its development, osteopathic education has been recognized as a suitable and worthy recipient of support. Since that declaration of policy, a grant of a half million dollars for osteopathic education was made by the Rockefeller Brothers Fund, and Mrs. John D. Rockefeller, Jr., gave another half million in support of a professorship in osteopathic principles and theory at the Kirksville College of Osteopathy and Surgery. A bequest estimated to be three and one-half million dollars was made for the purpose of endowing research in the field of osteopathic theory and practice. Other grants in support of osteopathic education have been $42,650 from pharmaceutical companies; $40,000 to the Kirksville College from an anonymous source; another anonymous gift to the Kirksville College, just recently received, for $700,000 for the construction of a research building; a million dollars from the Commonwealth of Pennsylvania to the Philadelphia College of Osteopathy for hospital construction, in addition to the biennial grant of $200,000 for general expenses of the College; a federal grant of $99,750 to the College of Osteopathic Physicians and Surgeons, Los Angeles, for research facilities; a grant of $5,548 to the Chicago College for a similar purpose; a federal loan of $570,000 to the Kirksville College for construction of student housing, and many smaller, but none the less welcome and complimentary gifts from divisional societies, specialty colleges, fraternities, and individuals, contributed for specified activities such as research, student loans, et cetera. Last year contributions to the Osteopathic Progress Fund from both professional and public gifts, were at an all-time high. The expansion program of osteopathic hospitals with public and federal support was phenomenal.

Although there is monetary potential in these public acceptances, there are many advances which are not purely financial in character. *Life* magazine published a factual story about the profession that won wide approval. Laymen of stature now serve on the Board of Directors of The National Osteopathic Foundation. Membership in the A.O.A. is at an all-time high, as is also the number in the osteopathic profession.

There is an increasing volume of invitations for A.O.A. representation at meetings at the national and local levels of various health-related agencies. Perhaps the most significant implication to be

drawn is that the profession has increased in stature to the point where its responsibilities in public programs are developing faster than had been anticipated.

This is no time for fear and faintheartedness. The last decade has been one of unprecedented growth and public recognition, and the future holds promise of even further advancement. Although many difficult, time-consuming, and expensive problems have been created by the California situation, if calm and straight thinking prevails and if the profession remains firm in its conviction that it has a contribution to make to the health care of the public, the end result should be a strengthening and solidifying of the osteopathic profession which has indicated in specific and unmistakable terms, through its representative House of Delegates of the A.O.A., the direction in which it wishes to go.

From VMN to RES

Analyzing trends in today's medical research often brings into dramatic clarity the firm course of medical philosophy's mainstream through the centuries since Hippocrates. Today's tools are infinitely advanced over those available to medicine's pioneer in the fifth century B.C. A vast research operation today in progress in Ridgefield, Connecticut, is exploring with 1961 A.D. tools the basic Hippocratic therapeutic pronouncement to healing arts disciples in ancient Greece.

Without any tools recognizable as such to modern eyes, Hippocrates adopted the fantastic Pythagorean concept of the components of the living organism—four humors, four basic elements, blood, phlegm, yellow bile, and black bile. Their harmonious combination added up to healthy living. Dyscrasia spelled disease and death. What to do? What about remedies, cures, survival? "Nature," he pronounced, "is the physician of disease." Every man has his built-in doctor inside his own individual body.

Latinized to *vis medicatrix naturae,* this basic doctrine of therapeutics, "the healing power of Nature," surged down through the ages, sometimes almost lost sight of as mankind's medicine men have sought methods, means, and medicaments to assist the "doctor inside," but the basic doctrine has always been there, the main current. Today in the Connecticut laboratories of the New England Institute for Medical Research, a major project is the work on the cells of the reticuloendothelial system, the specific cells which react to invasion of living tissue by substances foreign to the individual organism.

There are trillions of cells in one human body, in each cell millions of molecules. The cells of the RES are found everywhere, close-packed in lymph nodes, the liver, wherever the needs are greatest. The scientists are exploring them from all the angles made possible by today's technics, electronic, chemical, radiologic, the entire armamentarium.

Important progress is being made. The body of knowledge is growing. And at every turn the basic fact stands firm—every organism is individual. The organism's RE cells react aggressively against everything foreign, not because it is good, bad, or indifferent, but because it is foreign. Preserving the organism's own individual integrity is plainly the RES function.

Unseen by Hippocrates, unimaginable in 420 B.C. in terms of twentieth century microscopic and ultramicroscopic pictures, unidentifiable by such delicate tests as are today available to the New England Institute, these RE cells were working then as now. The vast progress science has achieved in aid of each organism's RES army is perhaps best expressed in today's individual life expectancy tables compared with times past.

Early osteopathic medicine's stress was on the blood and lymph circulation, using manual measures to help provide the RES cell-armies with unimpeded supply lines, to facilitate clearing the debris of battle from the battlefields before it could pile up and become a new menace to the organism's operational integrity. Osteopathic medicine today uses everything useful that science devises for this warfare that continues as long as the individual lives.

The oft-heard cynical translation of the Hippocratic maxim, "He got well in spite of the doctor!" is not heard today when the physician has based his thinking on VMN working under its modern names, like RES.

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- Expansion of Central Office Facilities, *Carl E. Morrison*
- Committee on Clinical Study, *Allan A. Eggleston*
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A.O.A. ACTIVITIES

A Message from the President of the American Osteopathic Association

▶ As this is being written, a new kind of meeting has just ended in Central Office in Chicago. Its subject was communications, and it was held under the auspices of The National Osteopathic Foundation.

Its panel of speakers was made up of authorities in the field of national health and welfare, and its audience was made up of doctors who will represent the American Osteopathic Association at the annual Forum of the National Health Council when it meets in New York City in March. Its purpose was to prepare these physicians for participation in the New York Forum and in its theme, "Better Communication for Better Health."

The following pages of this issue carry the story of the Chicago meeting. Here, however, I want to share with you the direction my thoughts took as the day's discussion on communication progressed.

Communication, of course, has made civilization possible. It is the coin of understanding, whether between nations or between individuals. The ability to communicate, in spoken and written word, is a distinctively human attribute. If it is to be fruitful, its essential element must be "shared concern."

In 1897, it was shared concern that gave birth to the American Association for the Advancement of Osteopathy, later to become the American Osteopathic Association. In time, the same kind of concern produced the divisional and affiliated associations. Since our beginning, as members of osteopathic organizations we have shared concern in matters of legislation, education, ethics, principles and purposes, and in professional and scientific advancement. Our colleges have trained doctors for the future, our hospitals have cared for the sick and injured. Organizationally, we have learned to communicate. Each year, the breadth of our communication grows and must continue to grow—for as yet our communication is weak.

But how *do* we communicate as individuals? Do we, as physicians and citizens, put into practice that which, as an organization, we know to be effective and fruitful? As doctors, do we really share the concerns of our patients? As citizens, do we assume the leadership open to us as professional men? Do we, for example, participate enough in programs for the aged and indigent;

do we see to it that children have immunizations; are we actively interested in civil defense and disaster medical care? Do we know our public health officers and administrators, and do we offer them our services? In a word, are we, as healers, concerned for our common goal, that of public health?

This kind of interest is *vital* to the profession's future. In the field of health, fruitful communication boils down to the concern of one citizen for the welfare of another. Opportunity is many times multiplied if one of these citizens is a physician.

The ultimate competence of the osteopathic profession can be forecast in the present competence of its individual members. Each of us can serve: as citizens, as members of welfare groups, on school boards, in church work, in municipal government. As osteopathic physicians, we can be active as members of local, state, and national associations. Each person has abilities that are *needed.* But *does* each person make his abilities available?

Legend tells us that Diogenes went about the cities of Greece with a lantern, searching the countenances of men. Perhaps from time to time he studied his own reflection. I wonder: Would any one of us be completely comfortable if he were to study his countenance for evidence of sustained and productive concern for others?

R. J. Harvey DO

201 W. Ellsworth Street, Midland, Michigan

As President of the American Osteopathic Association, Dr. Roy J. Harvey is scheduled in the coming weeks to attend these conventions and meetings:

Third combined convention of the American College of Osteopathic Obstetricians and Gynecologists and the American College of Osteopathic Pediatricians, Las Vegas, Nevada	February 6-9
New Jersey Association of Osteopathic Physicians and Surgeons, Atlantic City	March 10-12
National Health Forum of the National Health Council, New York City	March 14-16
Colorado Osteopathic Association, Colorado Springs	April 13-15
National Osteopathic Child Health Conference, Kansas City, Missouri	April 17-19
Illinois Osteopathic Association, Chicago	April 20-23
Tennessee Association of Osteopathic Physicians and Surgeons, Chattanooga	April 30-May 3

Student Loan Committee completes 30 years of service

▶ The autumn meeting of the profession's Student Loan Fund Committee, held recently in Central Office, Chicago, marked three notable milestones. The Committee's chairman, Dr. Robert N. Evans, La Grange, Illinois, completed his thirteenth year as a member, and his tenth as chairman; Miss Dorcas Sternberg, of the Central Office staff, completed her tenth year as secretary; and up for consideration was the largest number of loan applications in Student Loan's 31-year history.

The remaining members of the Committee also rounded out sizable terms. Dr. K.R.M. Thompson, Chicago, completed 9 years of service; Dr. Lloyd R. Wood, Oregon, Illinois, 8 years; and A.O.A. Business Manager Walter A. Suberg, 5 years. Mr. Suberg succeeded Dr. C. N. Clark as an ex officio member.

Service sets record • This total of 45 years of Committee membership on the part of five people sets an A.O.A. record, and Dr. Evans' 13 years of continuous service is exceeded only by that of Dr. Wilbur V. Cole, Kansas City, Missouri, who has been chairman of the Convention Scientific Exhibit for 14 years. Miss Sternberg, who was Dr. McCaughan's assistant during his years as fund secretary, is the one Committee member who has been a part of the loan program since its beginnings.

The fall meeting considered 105 applications for loans submitted by 43 juniors and 62 seniors from the six osteopathic colleges. Sixty-three loans were granted, 41 to be made immediately and 22 to be completed as funds become available, probably within a few weeks.

Fund instituted in 1931 • The Student Loan Fund was instituted in 1931, the idea of the late Ernest R. Proctor of Chicago. Its purpose was to give financial aid to students in the form of loans, to be repaid within 2 years after graduation. The Fund was to be supported through an annual Christmas seal campaign, gifts and bequests, and the repayment of loans. This last is the fundamental strength of the program.

The first seal campaign, in 1931, produced just over $2,000, and six loans were made, one to one student in each of the six colleges.

The campaign has developed steadily, especially since 1951, when a mechanism for public giving was put into action. Gifts and bequests have increased. During his lifetime, Dr. Edgar W. Culley, Melbourne, Australia, gave close to $50,000 to the fund. Dr. Clara Wernicke, an honorary member of the Committee, is a generous annual donor, and the Osteopathic Women's National Association, when it dissolved its organization in 1954, turned over its student loan fund to the national organization. The amount in repaid loans and interest grows each year. Much of the administration of the program is now under The National Osteopathic Foundation.

Half-million in loans • At the close of the 1959-60 fiscal year, 837 students had been aided by loans that totaled $573,000. One out of every sixteen osteopathic physicians now in practice was aided during his college years.

In 1949, the Research Fund became a co-recipient of Christmas seal returns, with each year's division made by the A.O.A. Board of Trustees on the basis of comparative need. For the last 4 years, the Loan Fund has been awarded 60 per cent of net returns.

"To serve on the Student Loan Fund Committee," said Dr. Evans at the close of the recent meeting, "is a gratification to all its members. We deal with tangibles. On one hand we have students who need help, and on the other, money to lend them. Frustration comes only when we have more students needing money than we have dollars to lend them.

"Today we were forced to postpone 42 loans. We look to the profession and the public, especially through the Christmas seal campaign, to help us overcome this obstacle in our aid to students."

At recent meeting of the Committee on Student Loan Fund, Dorcas Sternberg and Dr. Robert N. Evans, second and third from left, completed 10 years service as secretary and chairman, respectively. Walter A. Suberg, left, Dr. Lloyd R. Wood, right, and Dr. K. R. M. Thompson, not pictured, complete the Committee.

Forum panel—From left, Irving S. Shapiro, Ph.D., of the Health Insurance Plan of Greater New York; Harold Weiner, National Publicity Council for Health and Welfare Agencies, New York; Aubrey Mallach, National Health Council, New York; and Thomas Sherrard, School of Social Service Administration, University of Chicago.

Foundation sponsors forum on communications

▶ Communication, as it applies to the health and welfare of the American people, was the subject of a forum held in Central Office, Chicago, December 12. Sponsored by The National Osteopathic Foundation, and financed by a grant from the Warner-Chilcott Laboratories, the all-day meeting was held to prepare delegates and representatives of the osteopathic profession for informed and productive attendance at the 1961 National Health Forum, to be held at the Waldorf-Astoria Hotel, in New York City, March 14 to 16. The theme of the New York Forum, which will precede the annual meeting of the National Health Council, will be "Better Communication for Better Health."

The forum in Central Office was opened by Dean W. Roberts, M.D., Chicago, a member of the NHC

Participants at forum—From left, Drs. Robert D. Anderson, Philadelphia; George W. Northup, Livingston, New Jersey; Carl E. Morrison, St. Cloud, Minnesota; A.O.A. President-Elect Charles L. Naylor, Ravenna, Ohio; and Alexander Levitt, Brooklyn.

Also participating were, left to right, A.O.A. President Roy J. Harvey, Midland, Michigan; Drs. Charles W. Sauter, Gardner, Massachusetts; W. Clemens Andreen, Wyandotte, Michigan; and Joseph H. Huff, Burlington, North Carolina.

board of directors and executive director of the National Society for Crippled Children and Adults. Dr. Roberts stressed communication between health agencies and the public and between agency and agency as the first essential to progress.

Speakers panel • Four leaders in the field of health communication made up the panel of speakers. Aubrey Mallach, New York City, director of the National Health Council Forum, was the meeting's moderator. He discussed the idea of pre-Forum conferences, and the progress made at three others held by the NHC in recent weeks in New York City and in Bethesda, Maryland.

"There is no substitute for face-to-face discussion," he said. "Each of us needs to become acquainted with the problems of the other. Communication is best achieved when we are willing to learn about disciplines other than our own, rather than to expect others to find out about ours. This responsibility of reaching out to each other belongs to each of us."

Other forum speakers were Thomas Sherrard, Chicago, assistant professor of the School of Social Service Administration of the University of Chicago; Harold Weiner, New York City, executive director of the National Publicity Council for Health and Welfare Agencies; and Irving S. Shapiro, Ph.D., director of the Health Education Division of the Health Insurance Plan of Greater New York. All are authorities in the field.

A.O.A. President Roy J. Harvey, Midland, Michigan, spoke briefly to close the forum. A.O.A. attendants included professional leaders who will attend the Health Forum as representatives of the Association, and members of the Central Office staff who work in the field of professional communication.

Association publishes 53rd edition of annual Directory

▶ The 1961 AMERICAN OSTEOPATHIC ASSOCIATION YEARBOOK AND DIRECTORY OF OSTEOPATHIC PHYSICIANS came off the press in mid-January. This is the fifty-third annual edition of this official handbook of information on osteopathic physicians, organizations, and institutions.

The DIRECTORY lists every known member of the profession, a total of just under 14,000. Members of the national association, numbering some 11,000, are listed both alphabetically and geographically, and non-members geographically only. Coded information following each physician's name gives his osteopathic college and year of graduation, date of birth, honorary A.O.A. memberships, type of practice or professional service, and indicates whether or not he holds membership in his divisional society. For convenience, particularly in patient referrals, information on practice is given in the geographic listings.

Officers and committeemen • The DIRECTORY publishes the roster of 1960-61 A.O.A. officers and committeemen; presidents and secretaries of divisional and affiliated organizations; specialty colleges and boards of specialty certification; and state and provincial licensing

boards. It lists osteopathic colleges and hospitals.

The volume also includes additional historical and organizational information. A supplement publishes the Association's Constitution, By-Laws, and Code of Ethics.

Directly responsible for production were A.O.A. Business Manager Walter A. Suberg; Caroline M. Wells, supervisor, membership department; Josephine L. Seyl, supervisor, information and statistics, and Ann Conlisk, assistant editor, A.O.A. publications.

"To know the DIRECTORY," said Mr. Suberg, "is to know the American Osteopathic Association, its membership, structure, and standards. It is an indispensable source of information on the osteopathic profession."

The DIRECTORY is distributed to all members of the A.O.A., to osteopathic institutions, and to advertisers and their agencies. Copies may be purchased from national headquarters.

Foundation releases research booklet; fourth in series

► The National Osteopathic Foundation has released "Focus on Research," the fourth in a series of booklets on osteopathy, addressed primarily to foundations, insurance companies, national health associations, and medical science writers.

Cover symbol of new A.O.A. booklet—The legend for the symbol reads: Man, the unique organism, growing from his environment and yet a part of it; man, reacting and adapting to the forces which surround him; man, the product of change; this is the focus of osteopathic research.

The brochure answers the question, "Why *osteopathic* research?" It discusses osteopathy's philosophy and practice, and its particular contribution to the basic knowledge of human health and disease.

"Focus on Research" was produced by the A.O.A. Division of Public and Professional Service. Leonard Heffel, staff writer, was the author of this and of two other booklets of the "Focus" series, those on osteopathic education and osteopathic hospitals. The first was "Focus on the Future," produced in 1958.

A.O.A. sponsors competition for news writers

► The fourth annual A.O.A. newspaper story competition, conducted by the Division of Public and Professional Service, closes February 15. The three winners of $100 each will be announced about April 1.

As in previous competitions, Edward Eulenberg, a writer for the Chicago *Daily News*, and a member of the journalism faculty of Northwestern University, will judge entries for their quality as newspaper stories, and a committee of osteopathic physicians will pass upon them for their scientific and technical content. All stories must have been published in 1960.

Entries in the competition are to be concerned with osteopathic events such as conventions, research projects, and college and hospital programs. They may report legal battles, or be feature stories about individual osteopathic physicians or institutions. The purpose of the contest is to further editorial attention to osteopathic medicine, and to express appreciation to journalists who seek to explain the contribution of osteopathy to national health care.

Winners of the 1959 awards were Betty Kohlman of the Tampa, Florida, *Tribune;* Brian Duff, of the San Diego, California, *Union;* and Blair Justice, of the Fort Worth, Texas, *Star Telegram.* Mr. Blair also won an award in 1958.

Meetings of national agencies of health and welfare

These meetings of health and welfare agencies of the United States are scheduled for the coming weeks:

National Dairy Council, Louisville, Kentucky	February 7-9
National Health Council and Health Forum	New York, week of March 20
American Academy of Pediatrics	Washington, D.C., April 10-12
National League for Nursing	Cleveland, April 10-14
American Pharmaceutical Association	Chicago, week of April 16
American Association of Industrial Nurses	Dallas, April 25-27
American National Red Cross	Cincinnati, May 8-10
American Psychiatric Association	Chicago, May 8-12
National Conference on Social Welfare	Minneapolis-St. Paul, May 14-19
National Tuberculosis Association	Cincinnati, May 21-26

Experts in general education join college survey teams

► Two "generalists" in education are serving with the osteopathic members of this year's survey teams in the evaluation of two of the six osteopathic colleges. This innovation is in keeping with the policy adopted by the Association's Bureau of Professional Education last spring as a part of its program of revision and development of educational processes.

Ronald Thompson, Ph.D., executive dean of special services at Ohio State University, was a member of the team that surveyed the Chicago College of Osteopathy in November, and Inla Crawford, Ph.D., educational consultant to the Middle States Association of Colleges and Secondary Schools, will serve on the team that will visit the Philadelphia College of Osteopathy February 20 to 22. Dr. Crawford was formerly vice chancellor of Syracuse University.

Dr. Dale Dodson, Northfield, Minnesota, a member of the A.O.A. Committee on Colleges, is chairman of both groups. Serving with him at the Chicago College, in addition to Dr. Thompson, were Dr. H. Dale Pearson, Erie, Pennsylvania; Dr. Charles C. Dieudonne, Los Angeles; and Director Lawrence W. Mills, of the A.O.A. Office of Education, Chicago. Working with him in Philadelphia, in addition to Dr. Crawford and Mr. Mills, will be Drs. John P. Schwartz, Des Moines, Iowa, and John W. Mulford, Cincinnati.

Under the revised accreditation procedures each osteopathic college will be evaluated every 4 years, and teams will continue to include outside specialists appointed or suggested by academic accrediting bodies. These "generalists" will serve as advisers and consultants to all A.O.A. educational committees as well as to survey teams.

These revisions in osteopathic methods are an outgrowth of the work of the ad hoc Committee on A.O.A. Organizational Structure, set up in 1957.

Bureau of Public Education on Health

Bureau reviews matters to come before 1961 legislators

► Following is an interim report on matters of public health, particularly at the state level:

Practice acts • In limited rights states whose legislatures will be in session this year, the provisions of licensing laws that regulate the practice of osteopathy will be a principal subject of the public education on health programs. In most of these states, legislatures have been informed of the adverse effects of laws that restrict utilization of the education and training of osteopathic doctors in the state. This is important, since most states are seriously concerned over the shortage of physicians to care for growing populations. They are also concerned that, due to restrictions on practice, the number of D.O.'s in their states is decreasing.

Scholarship-loan bills • During 1960, most divisional societies investigated the need for some type of scholarship-loan law to give financial aid to osteopathic students. They are studying scholarship-loan bills primarily directed toward encouraging physicians to locate in rural areas. Such a law was enacted during the 1959 session of the Florida legislature.

Medical care for the aged • Three states have already submitted plans to the federal government to implement the 1960 Social Security amendments providing for the new Medical Care for the Aged program. Printed below are the texts of senate bills 1001 and 1002 recently enacted by the Michigan legislature. This is the first such action by a state to implement the federal Social Security amendments of 1960 (Public Law 86-778), which became effective October 1. (See the JOURNAL for December, page 316).

Other states are at different levels of planning. In some, new laws are required to permit participation in the new federal aid program. Federal law permits a broad scope of medical care to be provided under state plans, and places no restrictions, in these plans, upon the utilization of the services of all licensed physicians and surgeons.

State boards of health • Rapidly expanding state health programs indicate the need for osteopathic representation on boards or advisory councils in state departments of health. In some states, such

membership is already in effect, and the benefit accruing to the public from such representation is recognized. The care of indigent and infirm persons is a responsibility shared by the osteopathic profession and its institutions, and it can be more effectively discharged if the profession participates in the development of state health plans.

State licensing boards • The American Association of Osteopathic Examiners, made up of osteopathic members of state licensing boards, will hold its annual meeting in Central Office, Chicago, Sunday evening, February 5. As is customary, the group is meeting while in the city to attend the Annual Congress on Medical Education and Licensure. The Congress is in part sponsored by the Federation of State Medical Boards of the United States.

Hospitals • It is anticipated that this year's state legislatures will consider an increasing number of proposals relating to the operation of hospitals. These proposals may include such matters as hospital records, taxation, statute of limitations, hospital liens, and privileged communications. The importance of the nonprofit hospital as a part of the health service system makes it advisable for divisional societies to give increased attention to all such proposals. They may have great effect upon the administration of nonprofit institutions.

Public health reports • With nearly all state legislatures in session during 1961, it is hoped that divisional societies will forward to this bureau reports on new health programs or proposals that may need study at the national level. Without the close cooperation of divisional committees for public education on health, it will be difficult for the A.O.A. Committee to keep abreast of the wide diversity of proposals that will be submitted in various state legislatures during the coming sessions. The Bureau will also appreciate current information on developments that merit the attention of other states.

Michigan first to act on new U.S. amendments for aged

► Following are the texts of the two bills passed by the State of Michigan recently to implement the Social Security amendments of the federal government, which became effective October 1:

ENROLLED SENATE BILL NO. 1001

AN ACT to authorize the state department of social welfare to expand its program of medical care and hospitalization of old age assistance recipients; and to authorize the transfer of state funds for this purpose.

The People of the State of Michigan enact:

Sec. 1. The department of social welfare is authorized to expand its existing program of vendor payments for medical care and hospitalization of old age recipients to include home nursing care services, and a physical examination for each new old age assistance recipient who is less than 66 years of age at the time of application.

Sec. 2. In addition to the sum appropriated for vendor payments by Act No. 138 of the Public Acts of 1960, the controller of the department of administration, upon request of the department of social welfare and with the approval of the state administrative board, shall transfer a sum not to exceed $1,539,000.00 out of the appropriation of $57,725,000.00 for public welfare purposes made in Act No. 138 of the Public Acts of 1960.

This act is ordered to take immediate effect.

ENROLLED SENATE BILL NO. 1002

AN ACT to provide medical assistance for the aged; to prescribe the terms and conditions for such medical assistance; to prescribe the powers and duties of the state department of social welfare and certain other state officers and agencies; to authorize the transfer and expenditure of state funds; and to prescribe penalties for the violation of this act.

The People of the State of Michigan enact:

Sec. 1. This act shall be known and may be cited as the "medical assistance for the aged act".

Sec. 2. As used in this act:

(a) "State department" means the state department of social welfare.

(b) "Commission" means the Michigan social welfare commission.

(c) "County bureau" means the county bureau of social aid.

(d) "Medical assistance for the aged" means medical and ancillary services as described and circumscribed in this act rendered persons eligible therefor.

(e) "Annual income" means income received during the 12 months preceding or anticipated during the 12 months following application for medical assistance under this act.

(f) "Medical institution" means a hospital certified by the state health commissioner or a county medical care facility.

Sec. 3. The state department shall establish a program for medical assistance for the aged under Title 1 of the federal social security act, as amended by Public Law No. 788 of the Eighty-sixth Congress. Medical assistance for the aged shall be granted to any resident of this state 65 years of age or older who meets all of the following conditions:

(a) He has made application therefor in the manner required by the state department.

(b) He is not receiving old age assistance.

(c) His need for the type of medical care available under this act for which application has been made has been professionally established and no payment for it is available through the legal obligation of a contractor, public or private, to pay or provide for such care without regard to the income or resources of the patient. No payment shall be made under this act for any hospital service for any injury, disease, or disability for which the patient is entitled to hospitalization or the cost thereof under the workmen's compensation law; except that payment may be made if an appropriate application for hospitalization or the cost thereof has been made under the workmen's compensation law, entitlement thereto has not been finally determined, and an arrangement satisfactory to the state department has been made for reimbursement if the claim under the workmen's compensation law is finally sustained.

(d) He, if unmarried, or not living with the spouse, has an annual income from all sources of not more than $1,500.00. If he is married, and living with the spouse, he may have an annual income, including the annual income of the spouse, of not more than $2,000.00. Included in income shall be the amount of a contribution which a son, daughter, or estranged spouse should be making to the applicant according to the standards of the state department, or pursuant to a court determination, if there is such a determination, except that the contribution shall not be included in income in respect to an application for hospitalization during the first 30 days of such hospitalization.

(e) He, if unmarried, has liquid or marketable assets of not more than $1,500.00 in value, or, if married, he and the spouse have liquid or marketable assets of not more than $2,000.00 in value. Excluded in making the determination of the value of liquid or marketable assets are the values of: (1) the homestead, (2) clothing and household effects, (3) cash surrender value of life insurance, and (4) not to exceed $1,000.00 of the fair market value of tangible personal property used in earning income.

(f) He has made no assignment or transfer of any real or personal property or income within 5 years immediately preceding the date of application for assistance under this act for the purpose of qualifying for medical assistance for the aged or for any form of assistance

granted under the social welfare act, or for the purpose of increasing the amount of medical assistance for the aged or any form of assistance granted under the social welfare act or for the purpose of precluding recovery.

(g) He is not a patient in any institution as a result of a diagnosis of tuberculosis or mental disease.

(h) He is not an inmate of a public institution except as a patient in a medical institution.

Sec. 4. Eligibility for medical assistance for the aged shall be determined by the county bureau in which the application was filed. When eligibility has been established, the county bureau shall notify the county social welfare board of the county in which the applicant resides and list the type of services under this act which are required. The county social welfare board shall make provision for the services as long as needed or until notified by the county bureau that eligibility no longer exists. Service shall not be resumed after discontinuance without a new notification from the county bureau. The state department shall pay the county social welfare board for services provided under this act, after approval of each invoice by the county bureau, not less than 90% of the amount thereof from moneys available in a special medical assistance for the aged subaccount hereby established as part of the medical assistance account created by section 11 of the social welfare act, as amended. The commission may reduce the services available under this act to the extent necessary to keep payments from the subaccount within the appropriation available. The state department may determine the propriety of all claims for services rendered under this act.

Sec. 5. The state department may file a claim for reimbursement from the estate of a deceased recipient of medical assistance for the aged for payments made during his lifetime but no claim shall be paid until after the death of a surviving spouse if there is one except a claim made in respect to improper payments of medical assistance. All claims under this section shall be fifth class claims.

Sec. 6. The powers and duties of the state department and the county departments of social welfare relating to the administration of federally subsidized programs under the social welfare act are hereby granted and imposed on these departments insofar as applicable to medical assistance for the aged. Such rules and regulations shall provide safeguards which restrict the use or disclosure of information concerning applicants and recipients to purposes directly connected with the administration of this act. A hearing shall be provided any applicant or recipient of medical assistance under this act as provided in sections 9 and 37 of the social welfare act. The commission shall adopt all necessary rules and regulations for implementation of this act in accordance with Act No. 88 of the Public Acts of 1943, as amended, being sections 24.71 to 24.82 of the Compiled Laws of 1948, and subject to Act No. 197 of the Public Acts of 1952, as amended, being sections 24.101 to 24.110 of the Compiled Laws of 1948.

At December meeting of the A.O.A. Committee on Membership—From left, Caroline Wells, supervisor, A.O.A. Membership Department, Chicago; Drs. William S. Spaeth, Drexel Hill, Pennsylvania; John W. Hayes, chairman, East Liverpool, Ohio; Jean F. LeRoque, Des Moines, Iowa; and James H. McCormick, Elkhart, Indiana.

Sec. 7. Persons eligible for medical assistance shall be entitled to the services enumerated in sections 8 and 9 of this act. Such services shall be rendered upon certification by the attending licensed physician that a service is required for the medical treatment of an individual. The services of a medical institution shall be rendered only after referral by a licensed physician and certification by him that the services of the medical institution are required for the medical treatment of the individual, except that referral shall not be necessary in case of an emergency. Periodic recertification that medical treatment which extends over a period of time is required, in accordance with regulations of the state department, shall be a condition of continuing eligibility to receive medical assistance.

Sec. 8. Hospital services to which an eligible person is entitled, when furnished by a hospital certified by the state health commissioner or by a county medical facility approved by the department, shall not exceed those services furnished by the Michigan hospital service corporation under its comprehensive hospital care certificate in effect on September 1, 1960, and on file with the state commissioner of insurance, as determined by the state department. The period of inpatient hospital service shall be the minimum period necessary in this type of facility for the proper care and treatment of the individual.

Sec. 9. Physicians' services to which an eligible person is entitled shall not exceed those services furnished by the Michigan Medical Service under its M-75 Blue Shield plan in effect on September 1, 1960, and on file with the state commissioner of insurance, as determined by the state department.

Sec. 10. In order to provide funds for the administration and operation of this act for the period ending March 31, 1961, the department of social welfare may expend a sum not to exceed $2,290,000.00 out of the appropriation of $57,725,000.00 for public welfare purposes made in Act No. 138 of the Public Acts of 1960. The controller of the department of administration, upon request of the department of social welfare and with the approval of the state administrative board, shall transfer the sum authorized for this purpose as provided in this act.

Sec. 11. Any person who violates any provision of this act for which no penalty is provided is guilty of a misdemeanor. Whenever any person receiving medical assistance for the aged is found to have provided inaccurate information regarding his resources or income or those of his spouse, the amount of medical assistance for the aged granted during any month in which the person was ineligible may be recovered in an action at law. Failure to provide the state department

with full and accurate information at time of application or promptly thereafter whenever changes occur in property or income shall constitute a fraud.

This act is ordered to take immediate effect.

Bureau of Public and Industrial Health

Dr. Anderson amplifies report on APWA-APHA activity

▶ To amplify points of information presented in the summary of the annual report of Dr. Robert D. Anderson, chairman of the Bureau of Public and Industrial Health, published in the November JOURNAL, page 229, a portion of the report is here printed in full. This portion is concerned with the activities of the American Public Welfare Association and with Dr. Anderson's attendance at the annual meeting of the American Public Health Association:

The physician in public welfare has an interesting history, for it varies so from state to state. Public health is not thought of as treating individuals per se, but rather the community and community-related ills. Public welfare, to the contrary, at the city, county and state level, has the legal responsibility for providing medical care to individuals. This is done in a variety of ways ranging from a fee-for-service basis, capitation, panel medicine, and so forth. As the amount of medical care provided by public welfare is increasing, the Bureau has felt a sense of obligation to inform itself and the A.O.A. by attendance at and, in time, participation in the various agencies concerned with setting policies in this area.

Role of APWA • One of the national agencies most intimately concerned is the American Public Welfare Association. While it is active in all areas of welfare, medical care is of such importance that a full-time medical care consultant is employed to coordinate the work of its medical committee with the work of other national agencies in producing guides, suggestions, and evaluations for medical care.

The A.O.A. is an agency member of the APWA, and members of the Bureau of Public and Industrial Health are individual members. Much of the money spent by the APWA for its study groups and institutes on medical care comes from foundations, the very foundations that the A.O.A. Council of Development is trying to interest in osteopathic education.

A.O.A. opportunity • It is the chairman's opinion, and generally agreed to by members of the Bureau, that the APWA is an area of service that can be rendered and of opportunity for a much needed professional acceptance at the policy-making level. It is evident from reports of members of the Bureau who have attended APWA meetings that we have a contribution to make; in most states the D.O. takes his place in the physician-patient relationship, but for some reason has not become active at the local, state, and national levels in policy determination that sets up guidelines for his medical care activity. As an aside, this is also true for the average M.D., but as there are many more M.D.'s than D.O.'s in official positions, they are more in evidence at welfare meetings. Until it becomes possible for us to gain firsthand knowledge of the extent of participation of the profession in medical care under welfare, the Bureau suggests that each Trustee and member of the House make himself a committee of one to learn the ramifications of the situation in his own state.

Meeting of APHA • The chairman reported on his attendance at the annual meeting of the American Public Health Association. He said, in part, "Most of my time was spent in attending meetings of the Medical Care Section which is one of fourteen sections of the APHA. Of the fourteen sections, there are only two about which we might honestly say that active participation is not an urgent necessity if the profession is to fulfill its responsibility. These two are the sections of Dental Health and Engineering. The other twelve are Epidemiology, Food and Nutrition, Health Officers, Laboratory, Maternal and Child Health, Medical Care, Mental Health, Occupational Health, Public Health Education, Public Health Nursing, School Health, and Statistics. It is at these section meetings, alone or with other sections, that all phases of modern medical care planning are presented and discussed."

At least twelve D.O.'s should be attending these section meetings. Who of the profession would they be? The A.O.A., through the Bureau as it is now doing; D.O.'s in city, county, and state public health and public welfare work; school health physicians; D.O.'s in industrial work and in insurance; osteopathic colleges sending bacteriologists and teachers of preventive medicine; teaching hospitals sending their administrators and nurses; and finally, our specialty colleges having representation in their respective areas of interest. All of the information gained should be epitomized for the House and Board.

Chairman attends meetings • In addition to the medical care section meetings, the chairman attended jointly sponsored meetings with the following organizations: National Health Council, Group Health Federation of America, American National Council for Health Education of the Public, Social Workers in Health and Welfare Programs, Committee on Medical Care Teaching, School Health, and the National Citizens Committee on World Health Organization.

For the third time, at the luncheon of the Medical Care Section where next year's program is discussed, osteopathy was offered as a topic for discussion. If and when this comes to fruition, it will be well that the profession has become more aware of the voluntary health agency.